Travel Demand Forecasting Technical Report

September 2008

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1. Introduction

The Maryland Transit Administration (MTA) is preparing an Alternatives Analysis and Draft Environmental Impact Statement (AA/DEIS) to study a range of alternatives for addressing mobility and accessibility issues in the corridor between Bethesda and New Carrollton, Maryland. The corridor is located in Montgomery and Prince George's Counties, just north of the Washington, DC boundary. The Purple Line would provide a rapid transit connection along the 16-mile corridor that lies between the Metrorail Red Line (Bethesda and Silver Spring Stations), Green Line (College Park Station), and Orange Line (New Carrollton Station). This *Travel Demand Forecasting Technical Report* describes the methodology used for the travel demand forecasting and presents the results of that analysis.

This Technical Report presents the methodology and data used in the analyses documented in the Purple Line Alternatives Analysis/Draft Environmental Impact Statement. The results presented in this report may be updated as the AA/DEIS is finalized and in subsequent study activities.

Maryland Transit Administration (MTA) developed a common travel demand forecasting model and procedures for two Alternatives Analyses in two separate corridors in the Washington DC regional modeling area. The intention was to use the same No Build forecast as the starting point for future forecasts for both the Corridor Cities Transitway (CCT) and the Purple Line (PL). Preliminary work on the CCT forecasts indicated that some enhancements to the Washington Metropolitan Council of Governments (MWCOG) travel model would be required to provide transit corridor-level alternative analysis travel forecasts information.

The enhanced model described in this document is referred to as the Maryland Alternatives Analysis Model, or the MDAA. It is based on the officially adopted MWCOG model version 2.1D#50, as modified by MWCOG for the 2007 Conformity Analysis, and referred to here as the COG Model. The COG model is a classic four step model with a static six iterations of feedback through trip generation, distribution, mode choice, and assignment. The COG mode choice model is a simple multinomial model that relies upon the path builder to distinguish choices among primary transit modes. It does not disaggregate transit trips into the various transit modes or transit access modes, nor does it accommodate transit assignment.

The COG Model was not fully developed to accommodate comprehensive transit analysis, and therefore a MWCOG model transit component post processor was developed, typically referred to as the COG Transit Component. Starting from the person trip tables that result from the sixth iteration of the full model feedback, the Transit Component applies a more sophisticated mode choice model which distinguishes between bus, bus/Metrorail, Metrorail only and commuter rail trips. Walk, Park-and-Ride, and Kiss-and-Ride trips are modeled separately and transit assignment is included. Full documentation of the Transit Component can be found in Post MWCOG - AECOM Transit *Component of Washington Regional Demand Forecasting Model Users Guide*, prepared by AECOM Consult, Inc., and dated March 2005.

The 2005 Transit Component was the starting point for modifications made for initial rounds of forecasts for the CCT. Additional modifications included edits to the networks, zones, and all files that are related to zonal-based demographics and walk percentages, to address corridor-level

conditions and reporting needs. Changes were made to the Transit Component scripts in order to accommodate the new zone structure and network modifications. The resulting model, referred to here as the CCT Model, was the starting point for the MDAA.

The MDAA starts with the CCT Model and incorporates modifications to improve confidence in transit forecasts in these two corridors. The MDAA replaces the COG Model home-based work trip distribution with the CTPP. The mode choice model is a nested logit model with bus, Metrorail, commuter rail, light rail and bus rapid transit alternative transit modes. A park-and-ride station capacity restraint model was implemented to account for limited capacity at key stations.

1.1. Background and Project Location

Changing land uses in the Washington metropolitan area have resulted in more suburb-to-suburb travel, while the existing transit system is oriented toward radial travel in and out of downtown Washington, DC. The only transit service available for east-west travel is bus service, which is slow and unreliable. A need exists for efficient, rapid, and high capacity transit for east-west travel. The Purple Line would serve transit patrons whose journey is solely east-west in the corridor, as well as those who want to access the existing north-south rapid transit services, particularly Metrorail and MARC commuter rail service.

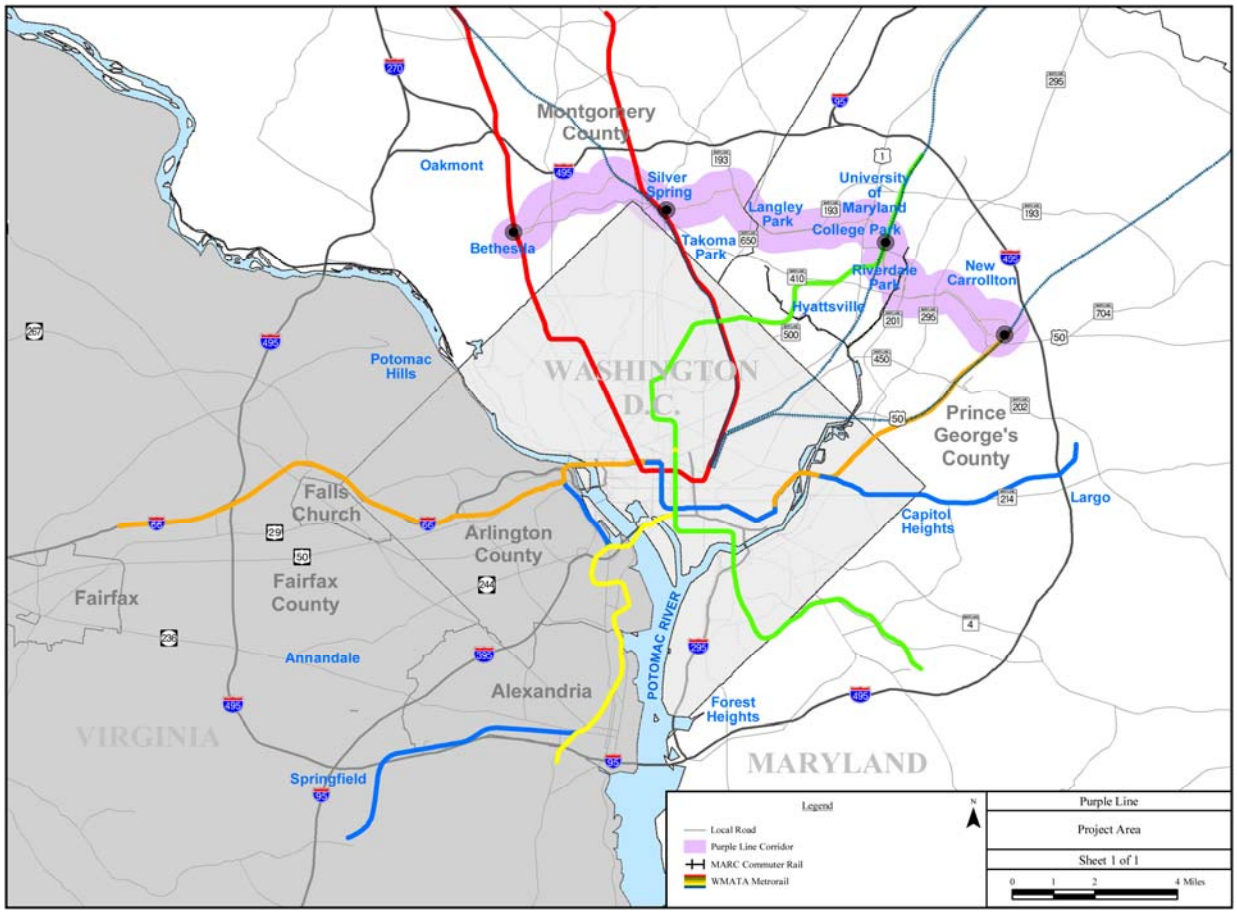
The corridor has a sizeable population that already uses transit and contains some of the busiest transit routes and transfer areas in the Washington metropolitan area. Many communities in the corridor have a high percentage of households without a vehicle, and most transit in these communities is bus service. Projections of substantial growth in population and employment in the corridor indicate a growing need for transit improvements. The increasingly congested roadway system does not have adequate capacity to accommodate the existing average daily travel demand, and congestion on these roadways is projected to worsen as traffic continues to grow through 2030.

A need exists for high quality transit service to key activity centers and to improve transit travel time in the corridor. Although north-south rapid transit serves parts of the corridor, transit users who are not within walking distance of these services must drive or use slow and unreliable buses to access them. Faster and more reliable connections along the east-west Purple Line Corridor to the existing radial rail lines (Metrorail and MARC trains) would improve mobility and accessibility. This enhanced system connectivity would also help to improve transit efficiencies. In addition, poor air quality in the region needs to be addressed, and changes to the existing transportation infrastructure would help in attaining federal air quality standards.

1.1.1. Corridor Setting

The Purple Line Corridor, as shown in Figure 1-1, is north and northeast of Washington, DC, with a majority of the alignment within one to three miles of the circumferential I-95/I-495 Capital Beltway.

Figure 1-1: Project Area



2. Travel Forecasts for Alternatives Analysis

This section provides descriptions of the alternatives for which travel forecasts were prepared for the alternatives analysis and DEIS, as well as a presentation of the results and discussion of the findings. In Chapter 3, more detailed information and forecast results are presented for each alternatives.

2.1. Alternatives Retained for Detailed Study

The Purple Line study has identified eight alternatives for detailed study, shown on Figure 2-1. The alternatives include the No Build Alternative, the Transportation System Management (TSM) Alternative, and six Build Alternatives. The Build Alternatives include three using bus rapid transit (BRT) technology and three using light rail transit (LRT) technology.

All alternatives extend the full length of the corridor between the Bethesda Metro Station in the west and the New Carrollton Metro Station in the east, with variations in alignment, type of running way (shared, dedicated, or exclusive), and amount of grade-separation options (e.g. tunnel segments or aerial). For purposes of evaluation, complete alignments need to be considered. These alternatives were used to examine the general benefits, costs, and impacts for serving major market areas within the corridor.

2.2. No Build Alternative

Existing transit service in the corridor is provided by WMATA Metrorail and Metrobus, Montgomery County Ride On local bus, Prince George's County TheBus local bus, the University of Maryland Shuttle, MARC commuter rail, and Amtrak. Table 2-1 lists the principal existing transit service within the corridor.

The transit service levels in the Constrained Long Range Plan (CLRP) are assumed for the No Build Alternative except for the Bethesda to Silver Spring segment of the Purple Line.

Figure 2-1: Alternative Alignments

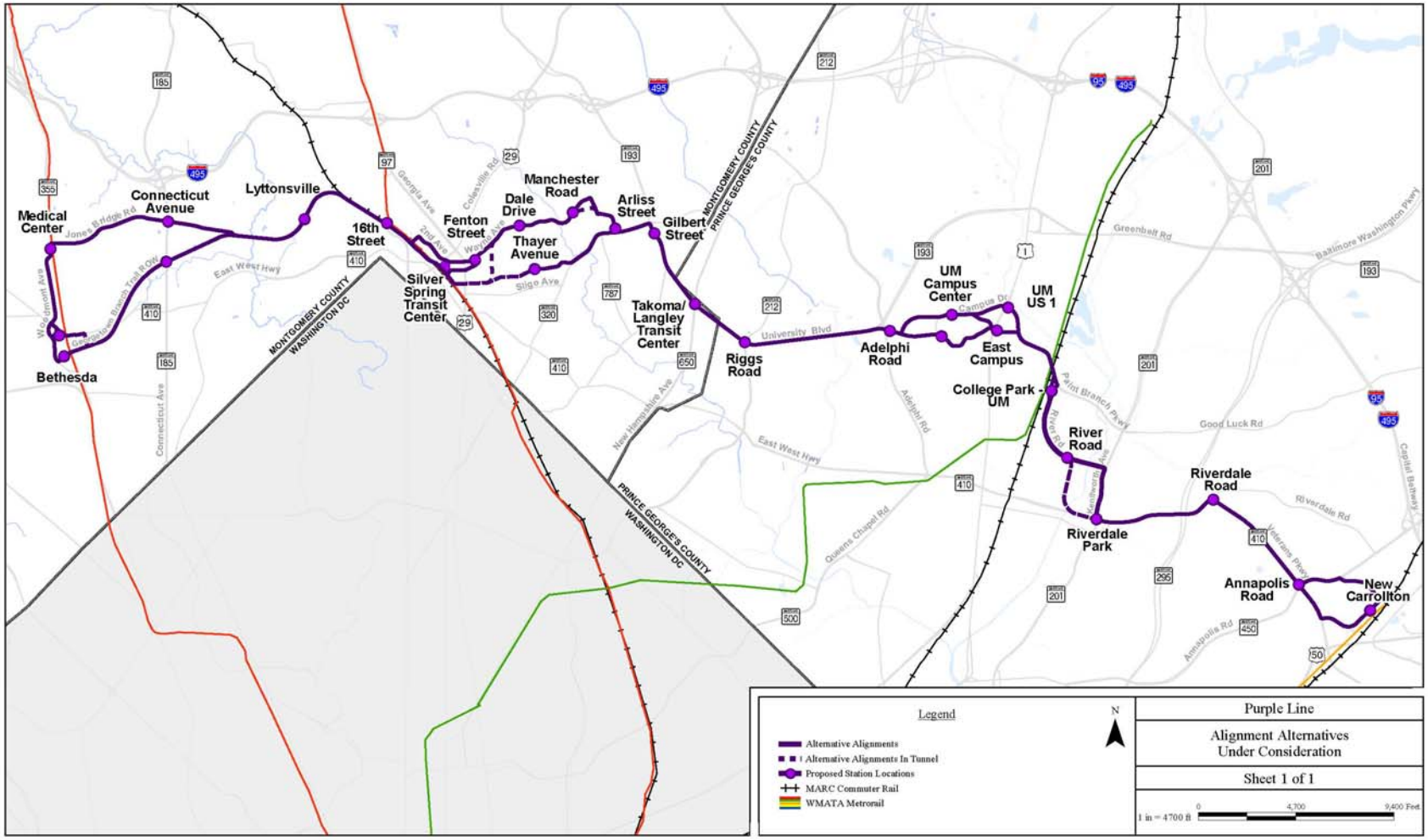


Table 2-1: Existing Transit Service

Route	Terminal & Intermediate Points
Metro Red Line	Shady Grove – Glenmont
Metro Green Line	Greenbelt – Branch Avenue
Metro Orange Line	Vienna/Fairfax/GMU – New Carrollton
J1, J2, J3	Montgomery Mall – Bethesda – Silver Spring Metro
J4	Bethesda Metro – Silver Spring – College Park Metro
C2	Wheaton Metro – Greenbelt Metro
C4	Twinbrook Metro – Prince George's Plaza Metro
F4	Silver Spring – New Carrollton
F6	Silver Spring – New Carrollton
Ride On 15	Silver Spring Metro – Langley Park
TheBus 17	Langley Park – UM – College Park Metro
UM Shuttle 111	UM – Silver Spring Metro
UM Shuttle 104	UM – College Park Metro
MARC Brunswick Line	Washington – Rockville – Gaithersburg - Brunswick
MARC Penn Line	Washington – BWI Thurgood Marshall Airport – Baltimore –Perryville
MARC Camden Line	Washington – Baltimore
Amtrak Northeast Corridor	Washington – New York and points north and south

Transit projects in the Maryland Consolidated Transportation Program (FY 2007-2012) located within the corridor, and expected to be in place by 2030, include the following:

- **Southern Entrance to Bethesda Metro Station** - A new entrance to the mezzanine of the Bethesda Metro station at the southern end of the platform. This second entrance was anticipated at the time of the initial construction of the station, but left unbuilt until ridership required it. The construction of this project is funded and design is currently underway.
- **Silver Spring Transit Center** - This project provides a fully integrated transit center at the Silver Spring Metro Station. It will serve the Metrorail Red Line and the MARC Brunswick Line. It will include bus bays for Metrobus and Ride On, an intercity bus facility, a taxi queue area, a kiss-and-ride facility, and a MARC ticketing office. Construction has begun on this facility and should be complete by 2010. Provisions have been made in the Transit Center design to accommodate a Purple Line guideway and platforms. For the Low Investment BRT Alternative, the buses would use the middle level bus facility.
- **Takoma/Langley Park Transit Center** - A new transit center will be built at the northwest corner of the University Boulevard and New Hampshire Avenue intersection. It is expected to be completed by 2010. All the Purple Line Build Alternatives would have a station at this transit center.

The Metrorail system opens at 5 AM on weekdays and 7 AM on weekends. It operates until midnight Sunday through Thursday and until 3 AM on Fridays and Saturdays.

Metrobus schedules vary by route, with most routes running every day. Ride On schedules also vary by route, with most routes running daily. TheBus buses operate Monday through Friday, with no service on weekends or holidays. Bus headways on all three systems vary by time of day. Table 2-2 lists the headways of the bus routes within the corridor. Transit service to the National Naval Medical Center/National Institutes of Health area is provided from Silver Spring and points east via the J1 route, while the Metrorail Red Line Medical Center Station connects to the entire rail-bus network.

Table 2-2: Year 2030 Bus Headways within the Corridor (minutes)

Route	Terminal and Intermediate Points	Early Morning	AM Peak	Midday	PM Peak	Evening	Saturday	Sunday
J1	Montgomery Mall-Medical Center-Silver Spring Metro	--	20	--	20	---	--	--
J2	Montgomery Mall-Bethesda-Silver Spring Metro	20	17	20	24	15	20	25
J3	Montgomery Mall-Bethesda-Silver Spring Metro	--	17	--	24	--	--	--
J4	Bethesda Metro-Silver Spring-College Park Metro	--	20	--	20	--	--	--
C2	Wheaton Metro-Greenbelt Metro	--	22	30	16	--	30	--
C4	Twinbrook Metro-Prince George's Plaza Metro	10	22	30	16	30	30	16
F4	Silver Spring – New Carrollton	12	12	40	15	--	30	60
F6	Silver Spring – New Carrollton	--	20	40	30	--	--	--
Ride On 15	Silver Spring Metro-Langley Park	15	4	12	4	30	12	15
TheBus 17	Langley Park-UM-College Park Metro	45	45	45	45	--	--	--
UM Shuttle 111	UM – Silver Spring Metro	--	35	75	45	30	--	--
UM Shuttle 104	UM – College Park Metro	8	8	12	8	20	20	20

Since no changes are anticipated to the bus network under the No Build Alternative, it is not anticipated that current service levels would change significantly, except for the impacts of growing roadway congestion, which is expected to result in lengthened bus running times and longer travel times for all vehicles.

The No Build Alternative would not include any alterations to the existing Metrobus, Ride On, or TheBus systems. It would not include addition of a new mode or new exclusive right-of-way, and would therefore not significantly increase the reliability of the existing transit system. It is expected that increasing roadway congestion will continue to decrease the reliability of the bus service, its adherence to its operational schedule, and the predictability of expected headways and transit travel times.

2.3. TSM Alternative

The TSM Alternative would include enhanced bus service in the corridor and a new through-route from Bethesda to New Carrollton replacing the existing J4 route and adding service on portions of the F4/F6 routes between College Park and New Carrollton. The TSM bus service would consist of a limited-stop bus route that would make stops consistent with those of the Build Alternatives. The core service improvements under the TSM Alternative are limited-stop bus service, selected intersection and signal preference strategies, and upgrades to bus stop amenities.

A principal difference between the TSM and the Build Alternatives is that the TSM service would operate on East West Highway between Bethesda and Silver Spring, rather than along a new guideway facility along the Georgetown Branch and Metropolitan Branch railroad rights-of-way between Bethesda and Silver Spring, as with the Build Alternatives (except under the Low Investment BRT Alternative, which runs along Jones Bridge Road.) Along East West Highway, stops would be located at Connecticut Avenue and at Grubb Road.

The TSM service would provide faster one-seat rides between major activity centers, including Medical Center Metro Station, Bethesda Metro Station, Silver Spring Metro Station, Takoma Park, Langley Park, University of Maryland, College Park Metro Station, and New Carrollton Metro Station. This route would also serve transfers to bus routes operating on radial streets, including those on Wisconsin Avenue, Connecticut Avenue, Colesville Road, Georgia Avenue, New Hampshire Avenue, Riggs Road, Adelphi Road, US 1, Kenilworth Avenue, and Annapolis Road. It would serve the long-haul trips now carried by WMATA J2/J3, Ride On 15, and, to a degree, WMATA C2/C4, and is estimated would serve nearly 80 percent of the passengers now boarding the existing routes along this corridor.

Transit service to the National Naval Medical Center/National Institutes of Health area would be provided from Silver Spring and points east through the enhanced J1 service with intersection, operational, or service modifications. The Metrorail Red Line Medical Center Station would continue to provide connectivity to the entire rail-bus network.

Because of the importance of serving the trips that interface with the Metrorail services in the Purple Line corridor, the TSM span of service would match the Metrorail span of service. The Metrorail system opens at 5 AM on weekdays and 7 AM on weekends. It operates until midnight Sunday through Thursday and until 3 AM on Fridays and Saturdays.

The fare structure for the TSM service would be the same as under the No Build Alternative, recognizing that fares would increase over time. SmartCard, or some other means of electronic fare collection, may enable an integrated fare structure and convenient transfer with other transit services in the corridors.

End-to-end, the TSM route is 16 miles long, requiring about 108 minutes of running time with an average round trip speed of 9 miles per hour. Today, the bus routes along the alignment operate in very difficult circumstances with a wide range of times in each direction and between the AM and PM. Anecdotal reports from WMATA indicate that the J4 route may require 50 percent

more time than scheduled on certain runs to complete its trip. These conditions complicate schedule preparation and operations planning. It is assumed TSM measures would somewhat mitigate these conditions; however, 2030 background traffic volumes and traffic congestion levels will be far greater than they are today.

Table 2-3: Year 2030 TSM Bus Headways (minutes)

Route	Terminal and Intermediate Points	Early Morning	AM Peak	Midday	PM Peak	Evening	Weekend
TSM	Bethesda – New Carrollton	10	6	10	6	10	20
J1	Medical Center – Silver Spring	--	20	--	20	--	--
J3	Eliminate; replace with Ride On 15 service	--	--	--	--	--	--
C2	Terminate at Langley Park Langley Park – Greenbelt	30	15	20	15	30	30
C4	Twinbrook Metro – Prince George's Plaza Metro	10	8	15	8	20	20
F4	Silver Spring – New Carrollton	12	10	30	10	--	30
F6	Terminate at Prince George's Plaza Prince George's Plaza – New Carrollton	--	15	30	15	--	--
Ride On 15	Bethesda – Langley Park (extend to Bethesda)	15	15	15	15	30	15
TheBus 17	Langley Park–UM–College Park Metro	45	45	45	45	--	--

The TSM Alternative includes modifications to existing Metrobus routes intended to improve reliability, including limited-stop bus service, and intersection improvements and signal priority at certain intersections. At intersections where queue jump lanes and signal priority would be implemented, transit's reliability would increase because the effects of congestion at these locations would be reduced. In addition, the limited-stop route would provide faster connections between major origins and destinations, as well as providing one-seat rides.

However, there is only limited opportunity for improving transit service reliability using signal preference strategies in the corridor. The major radial roadways that cross the corridor, such as Connecticut Avenue, Georgia Avenue, New Hampshire Avenue, Riggs Road, Adelphi Road, US 1, Kenilworth Avenue, and Annapolis Road, are the major sources of delay and unreliability. These roadways carry very heavy arterial traffic flows into and out of Washington, DC and other major activity centers. There is very little opportunity to introduce signal preferences at these intersections without causing a major exacerbation of traffic congestion. Queue jump lanes, however, do provide a travel time reliability advantage enabling transit vehicles to get to the intersection and limit the delay to one or two traffic signal cycles.

2.4. Build Alternatives

Six Build Alternatives are under consideration. They include two transit modes, BRT and LRT. Each mode is being analyzed at three potential levels of investment: low, medium, and high. All of the Build Alternatives would extend the full length of the corridor between the Bethesda

Metro Station and the New Carrollton Metro Station with some variations in alignment location, type of running way (shared, dedicated, or exclusive), and amount of grade separation. The decision to construct dedicated lanes is dependent on the results of the operations modeling (which assumes no dedicated lanes), as well as construction costs and potential environmental benefits and impacts. Each of the Build Alternatives is described briefly below.

2.4.1. Alternative 3 - Low Investment BRT

The Low Investment BRT Alternative would primarily use existing streets to minimize capital costs. It would incorporate improvements to traffic signals (including signal priority where possible), signage, and travel lanes in appropriate areas. This alternative would mostly operate in mixed lanes, crossing all intersections at grade, and would include queue jump lanes at major intersections. Dedicated BRT lanes would be provided southbound along Kenilworth Avenue, and westbound along Annapolis Road. This is the only Build Alternative that would operate on Jones Bridge Road (directly serving the National Institutes of Health and the National Naval Medical Center) and that would use the bus portion of the new Silver Spring Transit Center.

2.4.2. Alternative 4 - Medium Investment BRT

The Medium Investment BRT Alternative is a composite of elements from the Low and High Investment BRT Alternatives. The Medium Investment BRT Alternative incorporates those lower-cost features for segments of the Low Investment BRT Alternative that perform reasonably well and those of the High Investment BRT Alternatives that provide reasonable benefits relative to the higher costs. The major incremental change for the Medium Investment BRT Alternative is that between Bethesda and Silver Spring, the transit service runs in a guideway in the Georgetown Branch right-of-way instead of along Jones Bridge Road. It would serve both the existing Bethesda bus terminal and the new south entrance to the Metro station beneath the Apex Building. At the Silver Spring Transit Center, the buses would enter on an aerial structure parallel to, but at a higher level than, the existing Metro and CSX tracks. Along University Boulevard the alternative would be in dedicated lanes and the alternative would leave Campus Drive in the University of Maryland at Regent's Drive to proceed directly through the East Campus development.

2.4.3. Alternative 5 - High Investment BRT

High Investment BRT is structured to provide the fastest travel time of the BRT alternatives. Tunnels and aerial structures are proposed at key locations to improve travel time and reduce delay. When operating within or adjacent to existing roads, this alternative would operate largely in dedicated traffic lanes. Like the Medium Investment BRT Alternative, this alternative would serve the Bethesda Station at both the bus terminal and the new south entrance. At the Silver Spring Transit Center, the buses would enter on an aerial structure parallel to, but at a higher level than, the existing Metro and CSX tracks.

2.4.4. Alternative 6 - Low Investment LRT

The terminal station for Low Investment LRT would be the Bethesda Metro Station with a connection to the southern end of the existing station platform (the LRT alternatives would only

serve the south entrance of the Bethesda Station and would operate there in a stub-end platform arrangement). It would operate in shared and dedicated lanes with minimal use of vertical grade separation and horizontal traffic separation. At the Silver Spring Transit Center, the light rail transit would enter on an aerial structure parallel to, but at a higher level than, the existing tracks.

This alternative would include incorporation of signal priority or queue jump lanes at major intersections where possible, to achieve measurable time savings or reliability without overly adversely affecting traffic at the intersections.

2.4.5. Alternative 7 - Medium Investment LRT

The Medium Investment LRT Alternative is a composite of elements from the Low and High Investment LRT Investment Alternatives. This alternative incorporates those lower cost features for segments of the Low Investment LRT Alternative that perform reasonably well and those of the High Investment LRT Alternative that provide reasonable benefits relative to their higher costs. The principal incremental change for the Medium Investment LRT Alternative is the introduction of several grade separations at major roadways and more dedicated sections along roadways; however, it does not include some of the longer tunnel sections in East Silver Spring, the University of Maryland, or Riverdale Park, that are included under the High Investment BRT and LRT Alternatives.

2.4.6. Alternative 8 - High Investment LRT

The High Investment LRT Alternative is nearly identical to the High Investment BRT Alternative, except that it only serves the south entrance of the Bethesda Metro Station.

2.5. Build Alternatives Operations

The span of service for the Build Alternatives would mirror that for the Metrorail system, including extended hours on weekend nights (see Table 2-4).

The headways of the various Build Alternatives would vary by time period to reflect demand requirements. Proposed headways are shown by time period in Table 2-5. The span of services of the bus routes that feed the TSM and Build Alternatives would be adjusted to service the market needing extended service times.

Table 2-4: Year 2030 Span of Service

Day of Week	Hours
Monday - Thursday	5:00 AM – 12:00 AM
Friday	5:00 AM – 3:00 AM
Saturday	7:00 AM – 3:00 AM
Sunday	7:00 AM – 12:00 AM

Table 2-5: Year 2030 Build Alternatives Headways (minutes)

Day of Week	Early AM	Peak	Midday	PM Peak	Evening	Late PM
Weekdays	10	6	10	6	10	10
Saturdays	20	N/A	10	N/A	10	20
Sundays	20	N/A	10	N/A	10	20

The fare for all of the Build Alternatives under consideration would be consistent with the current local bus fare structure, recognizing that this would increase over time. SmartCard, or some other means of electronic fare collection, would enable an integrated fare structure and convenient transfer with the other transit services in the corridor.

The end-to-end travel times and average estimated speeds for each Build Alternative are shown in Table 2-6. As expected, the High Investment LRT Alternative, with strategic grade separation and mostly dedicated or exclusive right-of-way, would have the shortest running time and the highest average speed of all the alternatives. Average station-to-station travel time estimates for the Build Alternatives are shown in Table 2-7.

Table 2-6: Year 2030 End-to-End Travel Times

	End-to-End Running Time (minutes)	Average Speed (mph)
TSM	108	9
Low Investment BRT	96	10
Medium Investment BRT	73	13
High Investment BRT	59	16
Low Investment LRT	62	15
Medium Investment LRT	59	16
High Investment LRT	50	19

2.5.1. Reliability

The overall reliability of any of the Build Alternatives would be higher than that for the No Build or TSM alternatives because portions of the service, depending on the alternative, would operate largely in dedicated lanes or exclusive right-of-way, thus removing the vehicles from the potential delays of roadway congestion. In areas where the Purple Line would operate in shared lanes, it is anticipated that queue jump lanes and signal prioritization would be implemented where possible. The High Investment Alternatives would have the highest reliability, and the Low Investment Alternatives would have the lowest reliability. Because of the terminal configuration of the High and Medium Investment BRT Alternatives at Bethesda that involves a street running loop, those two alternatives would not be as reliable as their LRT counterparts. Similarly, the Low Investment BRT Alternative with its operations along Jones Bridge Road between Bethesda and Jones Mill Road would have lower reliability than the Low Investment LRT Alternative, which would operate in the Georgetown Branch right-of-way, which is an exclusive right-of-way.

Table 2-7: Year 2030 Average Station-to-Station Travel Times (minutes)

Segment	TSM	Low Inv. BRT	Medium Inv. BRT	High Inv. BRT	Low Inv. LRT	Medium Inv. LRT	High Inv. LRT
Bethesda Metro, North entrance to Medical Center Metro	N/A	4.7	N/A	N/A	N/A	N/A	N/A
Bethesda Metro, North entrance to Bethesda Metro, South entrance	N/A	N/A	5.2	5.2	N/A	N/A	N/A
Medical Center Metro to Connecticut Avenue	N/A	6.0	N/A	N/A	N/A	N/A	N/A
Bethesda Metro, South entrance to Connecticut Avenue	10.8	N/A	5.5	5.5	4.0	2.4	2.4
Connecticut Ave. to Grubb Road	7.3	N/A	N/A	N/A	N/A	N/A	N/A
Connecticut Avenue to Lyttonsville	N/A	5.2	3.1	3.1	2.3	2.3	2.3
Grubb Road to Silver Spring Transit Center	13.2	N/A	N/A	N/A	N/A	N/A	N/A
Lyttonsville to Woodside/16th Street	N/A	2.4	2.4	2.4	2.1	2.1	2.1
Woodside/16th Street to Silver Spring Transit Center	N/A	6.2	2.1	2.1	2.8	2.0	2.0
Silver Spring Transit Center to Fenton Street	5.1	4.6	3.1	N/A	3.1	3.1	N/A
Silver Spring Transit Center to Dale Drive	N/A	N/A	N/A	2.6	N/A	N/A	3.6
Fenton Street to Dale Drive	4.8	2.8	3.0	N/A	3.8	3.1	N/A
Dale Drive to Manchester Road	2.9	2.3	2.3	2.1	3.1	2.8	2.4
Manchester Road to Arliss Street	4.9	4.8	4.7	1.4	1.4	1.4	1.4
Arliss Street to Gilbert Street	6.6	6.6	3.4	4.0	3.8	3.8	3.8
Gilbert Street to Takoma/Langley Transit Center	4.8	4.8	2.3	2.2	2.2	2.2	2.1
Takoma/Langley Transit Center to Riggs Road	5.8	5.6	2.7	1.7	2.4	2.4	1.7
Riggs Road to Adelphi Road	6.0	5.7	5.6	3.1	3.3	3.3	3.1
Adelphi Road to UM Campus Center	4.0	3.7	2.9	2.6	2.9	2.9	2.6
UM Campus Center to UM East Campus	8.6	8.6	3.0	2.9	3.0	3.0	2.9
UM East Campus to College Park Metro	2.0	2.2	3.0	3.0	3.0	3.0	3.0
College Park Metro to River Road	2.0	1.8	1.9	1.9	1.9	1.9	1.9
River Road to Riverdale Park	5.5	5.0	4.3	3.2	4.6	4.6	3.1
Riverdale Park to Riverdale Road	4.4	4.4	4.7	2.9	4.8	4.8	2.9
Riverdale Road to Annapolis Road	4.7	4.0	3.6	3.5	3.5	3.5	3.3
Annapolis Road to New Carrollton Metro	4.6	4.4	3.8	3.5	3.9	3.9	3.6
Total Running Time (rounded up to the nearest minute)	**108**	**96**	**73**	**59**	**62**	**59**	**50**

Note: Times represent the average of morning and afternoon peak period travel times in the eastbound and westbound direction, which may vary with the specific period coding assumptions.

2.5.2. Ridership

Ridership forecasts are used to gauge the comparative attractiveness of alternatives under consideration. They are measured in terms of daily passengers and daily boardings, also called linked and unlinked trips. A passenger, or linked trip, is defined as travel from trip origin to trip destination, regardless of the number of transfers or mode changes required. A boarding, or unlinked trip, is counted as the number of times a person enters a vehicle for travel, inclusive of transfers. One linked trip from origin to destination could comprise multiple unlinked trips.

Purple Line ridership forecasts were measured in terms of total and new daily transit trips (linked), peak period boardings and alightings by station, and by peak period line volumes.

2.5.3. Total and New Transit Trips

The Build Alternatives would generate an approximately one percent increase in total regional transit ridership over the No Build Alternative. Detailed ridership forecasts are shown in Table 2-8. The results of the ridership modeling would indicate that forecast ridership on the Purple Line will not be the key determinant in selecting a preferred Build Alternative, but rather the results of the environmental, traffic, and cost-benefit analyses.

2.5.4. District–to-District Travel Patterns

The Washington metropolitan region was defined as a set of districts to enable a discussion of the current travel patterns (see Figure 2-2). A set of districts are identified around the major activity centers of Bethesda, Silver Spring, College Park/University of Maryland, and New Carrollton. Three additional districts are the "wedge" areas in between the major activity centers, Connecticut Avenue-Lyttonsville, Takoma Park-Langley Park, and Riverdale. These seven districts constitute the Purple Line corridor.

Other districts are used to define major sections of Washington, DC and travel market areas around the Metrorail lines (both branches of the Red Line, the Green Line, and the Orange Line) running to the north and northeast of the corridor. The rest of the region is defined by larger districts for the remainder of Maryland and the areas of Virginia.

The Purple Line corridor has approximately 169,000 daily transit trips that have one or both ends of the trip in the corridor. This represents some 9.5% of the transit trips for the Washington region. Some 44,000 of these transit trips have both ends of the trip within the Purple Line corridor while 60,000 transit trips are between the corridor and some part of Washington, DC. A large number of the remaining trips are associated with districts to the north or northeast of the Purple Line corridor along the Metrorail lines. The majority of the trips in the corridor are associated with the major activity centers, 134,000, while the other 35,000 are associated with the wedge districts. Of the trips associated with the major activity centers, only 9,000 are from one major activity center to another. For the wedge district trips, 8,400 are associated with the major activity centers with 15,400 associated with the Washington, DC districts.

Table 2-8: Year 2030 Total Daily Linked Transit Trips

	Type of Trip	No Build	TSM	Low Invest. BRT	Medium Invest. BRT	High Invest. BRT	Low Invest. LRT	Medium Invest. LRT	High Invest. LRT
Bus	Work	236,139	238,873	229,096	226,886	225,970	225,829	225,448	224,879
	Non-work	211,747	214,772	207,301	205,934	205,403	205,344	205,098	204,434
Metrorail	Work	561,114	560,040	558,148	558,299	557,668	558,423	558,377	558,446
	Non-work	298,451	300,917	300,909	301,583	301,852	302,331	302,523	303,011
Commuter Rail	Work and Non-Work	47,944	48,983	48,922	48,937	48,984	48,934	48,930	48,956
Purple Line	Work	NA	NA	13,827	17,896	20,759	20,444	21,377	22,953
	Non-work	NA	NA	8,570	11,169	12,423	12,307	12,849	13,488
Total Transit Trips		**1,355,395**	**1,363,585**	**1,366,773**	**1,370,704**	**1,373,059**	**1,373,612**	**1,374,602**	**1,376,167**

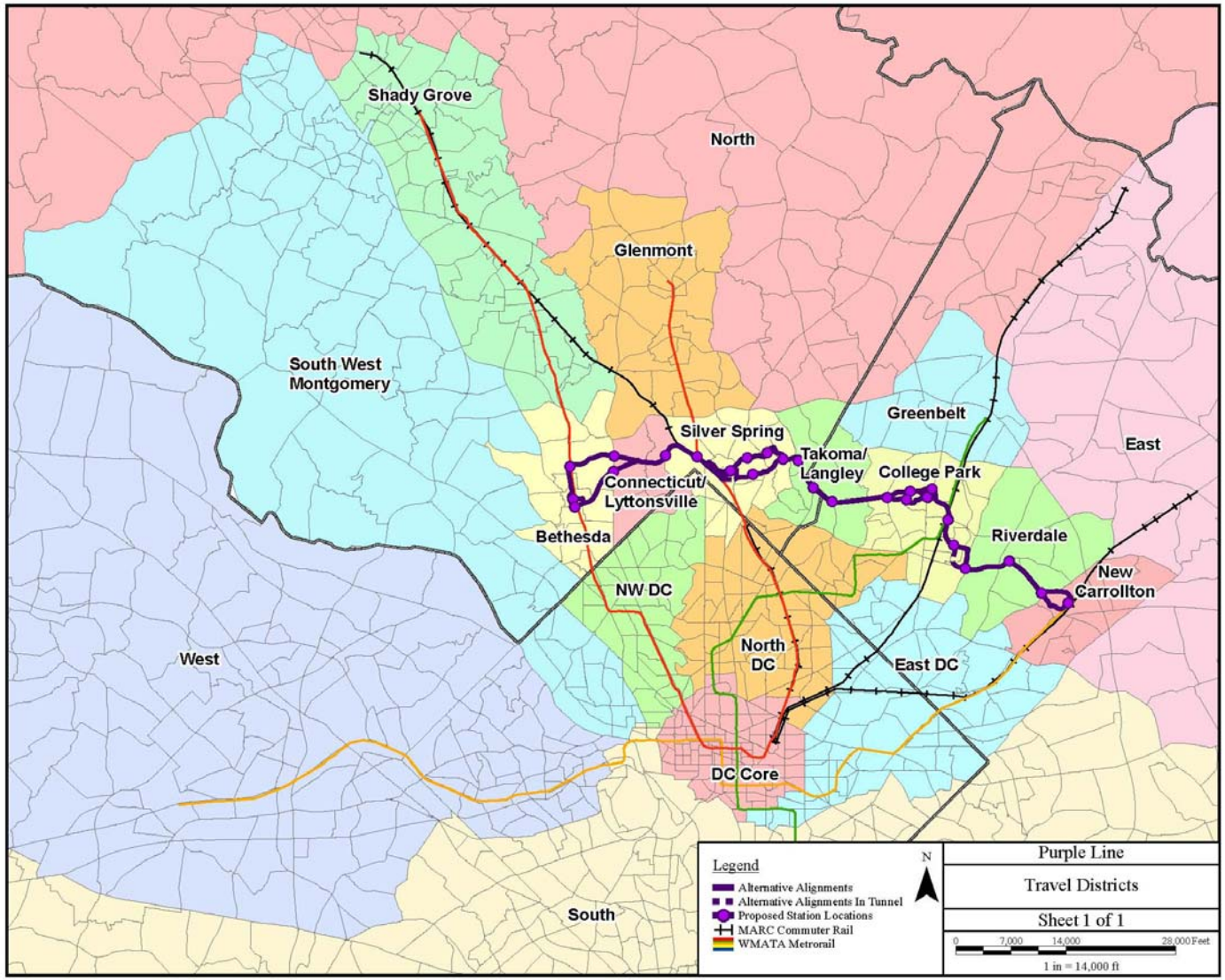


Figure 2-2: Travel Districts

What this information shows is that while there is quite a bit of existing transit travel within the Purple Line corridor, that number of corridor trips associated with areas outside the corridor is greater, i.e., corridor trips associated with Washington, DC and the area north along the Metrorail Red, Green, and Orange Lines that run through the major activity centers, especially up toward the Shady Grove-Rockville area and Glenmont area. While the major activity center districts account for the majority of the trips, a substantial number of trips are associated with the wedge districts, those areas not presently served by Metrorail and dependent on street-running bus service operating in congested mixed traffic, are linked with either one of the major activity centers or areas reachable via the Metrorail system, especially Washington, DC.

By the year 2030, daily transit trips are forecast to grow by 953,000, 52%, for a total of 2,711,000. Transit trips associated with the corridor will grow by 38%, to 234,000, while trips within the corridor will grow by 43% to 62,000 trips. While the general pattern and distribution of these transit trips would be similar to current trips, the level of growth is substantial, increasing the severity and the magnitude of the mobility needs of Purple Line corridor travelers.

The TSM Alternative would increase daily total transit trips by 16,000 over the 2030 Future No Build. Of these new transit trips, 13,200, over 80%, are between the corridor and areas outside the corridor; while the other 2,800 trips are within the corridor. The TSM alternative provides most of the benefits to corridor trips to access the transit services that connect with the rest of the region; rather than travel among districts within the corridor.

All the Build Alternatives have a similar pattern of change in the travel patterns, but because they have a similar alignment and station definitions and vary primarily by travel times, have different amount of new transit trips with High Investment LRT generating the highest number of new transit trips, and Low Investment BRT generating the lowest.

2.5.5. Daily Line Haul Boardings

Table 2-9 shows the total daily boardings for each of the alternatives. A boarding is when a person uses the transit service for all or part of trip. The boardings are shown for trips only using the Purple Line (over half the boardings), trips primarily on Metrorail and using the Purple Line for part of that trip, and trips primarily on MARC and using the Purple Line for part of that trip. High Investment LRT attracts the highest number of boardings followed by the other LRT alternatives and then the BRT alternatives.

Table 2-9: Year 2030 Daily Purple Line Ridership

Transit Ridership (daily boardings)	TSM	Low Invest. BRT	Medium Invest. BRT	High Invest. BRT	Low Invest. LRT	Medium Invest. LRT	High Invest. LRT
Purple Line	12,700	22,200	29,300	33,800	32,500	33,900	36,100
Purple Line via Metrorail	2,100	16,700	21,100	23,700	25,300	27,200	30,500
Purple Line via MARC	--	1,100	1,400	1,400	1,500	1,500	1,500
Total	**14,800**	**40,000**	**51,800**	**58,900**	**59,300**	**62,600**	**68,100**
New Transit Trips Relative to No Build	**8,200**	**11,400**	**15,300**	**17,700**	**18,200**	**19,200**	**20,500**

2.5.6. Daily Station Boardings

Daily boardings, by station, for each of the Build Alternatives are shown in Table 2-10. Not surprisingly, the highest number of riders is attracted by the High Investment LRT Alternative, followed by the Medium Investment LRT Alternative, and the Low Investment LRT and High Investment BRT, which attract approximately the same number of riders. All of the Build Alternatives, except the Low Investment BRT, have the same top three stations for daily boardings: the western terminus in Bethesda (north or south), the Silver Spring Transit Center, and the College Park Metro Station. For the Low Investment BRT Alternative, the top three stations for daily boardings are the Silver Spring Transit Center, US 1 and College Park Metro Station.

2.5.7. Station Mode of Access

At all the stations along the Purple Line alternatives, walk and feeder bus access would be the principal means of access and egress. At the Bethesda, Silver Spring, College Park, and New Carrollton Stations, transfer with Metrorail would be the major connection. With the exception of Bethesda, MARC connections would also be available at those stations. Major bus interfaces will occur at Bethesda, Silver Spring, Takoma/Langley, College Park, and New Carrollton stations. All these connections are with existing services. Some of the existing bus services will be modified to better integrate with the Purple Line stations. Some existing bus services that duplicate the Purple Line service may be cut back. While parking facilities exist at the four Metrorail stations that connect with the Purple Line, no new park-and-ride facilities would be provided at any of the Purple Line stations. Some kiss-and-ride could occur at some of stations, as occurs today at some bus stops, but additional kiss-and-ride facilities are being considered at Connecticut Avenue at the Georgetown Branch right-of-way, and at Lyttonsville.

Table 2-10: Year 2030 Build Alternatives Daily Boardings

Segment	TSM	Low Invest. BRT	Medium Invest. BRT	High Invest. BRT	Low Invest. LRT	Medium Invest. LRT	High Invest. LRT
Bethesda Metro, North Entrance	800	1,400	5,600	6,000	N/A	N/A	N/A
Medical Center Metro	N/A	3,900	N/A	N/A	N/A	N/A	N/A
Bethesda Metro, South Entrance	N/A	N/A	2,800	3,000	11,300	12,700	13,300
Montgomery Avenue	100	N/A	N/A	N/A	N/A	N/A	N/A
Connecticut Avenue	100	400	500	500	900	900	1000
Grubb Road	500	N/A	N/A	N/A	N/A	N/A	N/A
Lyttonsville	N/A	600	700	700	800	800	900
Woodside/16th Street	N/A	1,400	2,000	2,500	2,200	2,300	2,400
Silver Spring Transit Center	1200	5,100	8,700	10,400	11,100	12,200	13,600
Fenton Street	600	600	600	N/A	700	700	N/A
Dale Drive	500	1,200	1,300	1,400	1,300	1,400	1,500
Manchester Place	600	700	800	1,100	800	900	1,200
Arliss Street	600	800	900	1,700	1,300	1,500	2,200
Gilbert Street	300	300	900	1,300	1,200	1,200	1,400
Takoma/Langley Transit Center	1300	1,400	2,300	3,200	2,700	3,000	3,700
Riggs Road	300	400	600	800	700	800	900
Adelphi Road	400	500	600	700	600	700	700
UM Campus Center	600	1,500	2,100	2,200	2,100	2,200	2,200
US 1 – East Campus	700	4,400	4,400	4,700	4,500	4,500	4,700
College Park Metro	2400	8,000	8,600	9,100	8,600	8,600	8,900
River Road	500	1,500	1,500	1,500	1,500	1,500	1,500
Riverdale Park	600	1,400	1,500	1,600	1,600	1,500	1,600
Riverdale Road	500	500	500	700	600	500	700
Annapolis Road	500	900	1,100	1,200	1,000	1,000	1,200
New Carrollton Metro	1,700	3,100	3,800	4,500	3,800	3,700	4,500
Total Boardings	**14,800**	**40,000**	**51,800**	**58,800**	**59,300**	**62,600**	**68,100**

2.5.8. University of Maryland Student Travel

The travel of University of Maryland employees, faculty, and staff to and from the campus is captured within the regional travel model forecasts and these trips are included in the forecasts for the Purple Line. Many of the 36,000 students live on campus or in nearby housing within walking distance of the campus. Others live off campus and commute to school. These trips are not as concentrated in the peak periods as employee trips and are not as regular, given that the university is not in full session over the summer and various break periods.

A portion of these commuting students would use the UM shuttle, TheBus and WMATA bus services. The UM Shuttle does provide connecting services to the College Park Metrorail Station and downtown Silver Spring, including the Metrorail station.

On-campus students also use the existing bus services to access off-campus destinations, including the College Park and Silver Spring Metro Stations. Many of these trips again occur outside the normal commuting peak periods – in evenings and on weekends. The UM Shuttle provides a regular and relatively frequent service between the campus and the College Park Metrorail station throughout most of the day, carrying about 3,000 trips on a typical day. The service connecting with Silver Spring carries about 500 trips on a typical day. According to the Shuttle operator, approximately half of the users are students, or about 1,700 per day. With the Purple Line in place, these shuttle services would be discontinued or re-routed and these 1,700 would likely use the Purple Line. Some portion of these trips is likely already included in the regional model forecasts. As noted earlier, the University faculty and staff are fully accounted for by the regional forecasting model. For the purposes of the comparison of the alternatives, the analysis assumes that these trips are included in the regional forecasts and would be similar across all the alternatives.

For the travel forecast for the further development of the Locally Preferred Alternative, a separate student trip purpose forecast will be developed.

2.5.9. Special Event and Special Generators Trips

Venues such as sport stadiums and arenas and events such as major festival or holiday fireworks displays generate trips that may not be included in the regional travel forecasting process. Washington, DC is the site of many of special events and special generators that occur with enough regularity and frequency that these are included in the regional model forecasts. Within the corridor, the principal special event and special trip generator venue is the University of Maryland campus in College Park, with Byrd Stadium, Comcast Center, and Clarice Smith Performing Arts Center. Byrd Stadium seats 50,000 people and hosts five to seven home weekend football games annually. The UM Shuttle carries a total of 2,000-3,000 trips (i.e. 1,000 to 1,500 individuals) for each game. This would mean that between 2 and 3 percent of the total attendance uses the Shuttle. For basketball, soccer, lacrosse, field hockey, and events at the Clarice Smith Performing Arts Center, shuttle ridership is relatively low. While the University of Maryland does not have actual records, on an annual basis the total number of special event and special generator trips on the Shuttle is between 40,000 to 50,000. Not all these trips would be candidates for the Purple Line; however, the Purple Line could make using transit for these

types of trips associated with the University of Maryland more attractive, especially if the Purple Line is centrally located on Campus Drive.

Most of these trips will be outside the normal weekday peak period, being on weekday evenings and on weekends. Averaging out over a typical weekday, these trips would represent about 170 trips, which is less than one percent of the daily usage of the Purple Line alternatives. So, while the Purple Line would provide an improved and attractive means of accessing the events at the University of Maryland and other venues, the amount will be a relatively small compared to the total usage.

2.5.10. Transportation System User Benefits

Transportation system user benefit is a measure of benefits that would accrue to users of the transportation system as a result of implementing an alternative. The users include both existing system users such as existing transit riders who might benefit from a faster trip or more convenient access to the service, as well as new transit users. These benefits include both time and monetary costs and are expressed in terms of minutes saved. The user benefit is calculated within the region's mode choice model for all alternatives and uses a measure of the traveler's value of time to convert monetary and other costs to their equivalence in time, which is added to actual time savings. Additional user benefits can accrue to users of fixed guideway transit services due to attributes of these systems not reflected strictly in terms of travel times and out-of-pocket costs. These are referred to as "mode specific attributes" and account for perceived benefits that users feel they receive for amenity, comfort, reliability, safety and other characteristics associated with the mode. The degree to which these additional benefits accrue to the users depends on the definitions of the alternatives. These would accrue to all the BRT and LRT alternative users to varying degrees depending on the specific attributes of the alternative. In this way, the measure includes a more comprehensive accounting of the total costs of travel.

Table 2-11 shows the total user benefits for the TSM and each of the Build Alternatives. As the table shows, the TSM alternative would generate more than 400,000 minutes of user benefit (about 6,700 hours) to travelers in the Washington metropolitan area each day. All of the Build Alternatives would generate higher user benefits than the TSM. The Low Investment BRT alternative would offer 75 percent more user benefits than the TSM, while the High Investment LRT Alternative would generate 271% more user benefits over the TSM alternative.

Table 2-11: Year 2030 Daily Transportation System User Benefits with Mode Specific Attributes

	Daily User Benefits (minutes)	Increase in Daily User Benefits over TSM (minutes)	Percent over TSM
TSM	401,200	--	--
Low Investment BRT	702,300	301,100	75%
Medium Investment BRT	1,022,200	621,000	155%
High Investment BRT	1,258,000	856,800	214%
Low Investment LRT	1,180,600	779,400	194%
Medium Investment LRT	1,303,800	902,600	225%
High Investment LRT	1,489,600	1,088,400	271%

2.5.11. Farebox Revenue

Farebox revenues are those that are collected from passengers using the transit services for making trips. People use a variety of means to pay fares, including cash, tokens, passes, and electronic farecards. Passes and farecards for multi-trip, or weekly and monthly periods are typically purchased at a discount. Fares revenues include both fares at the initial boarding of the trip as well any transfer costs. The Purple Line corridor has a number of transit operators including WMATA, MARC, Ride On, and TheBus. For the purposes of this analysis, the operator of the Purple Line would be the MTA.

With the increase in systemwide transit users forecasted for the alternatives, the increase in systemwide farebox revenues relative to the 2030 No Build are presented in Table 2-12.

Table 2-12: Year 2030 Annual Change in Systemwide Farebox Revenues by Alternative Relative to No Build

Alternative	Annual Change
TSM	$3,423,000
Low Investment BRT	$5,829,000
Medium Investment BRT	$7,500,000
High Investment BRT	$8,452,000
Low Investment LRT	$8,921,000
Medium Investment LRT	$9,3556,000
High Investment LRT	$10,167,000

3. Supplemental Forecast Input and Results by Alternative

The following section provides for each alternative further information and assumptions used as input to the travel forecasts, as well as more detailed forecasts results which supplement the information provided in the previous section.

3.1. No Build

3.1.1. Assumptions

The 2030 No Build network consisted of the Metropolitan Washington Council of Governments (MWCOG) officially adopted 2030 network as provided in the MWCOG model version 2.1D#50 with the following changes:

- Zone realignments and subdivisions in Montgomery County and the requisite network changes,
- Network corrections as identified by Michael Baker Corporation in conjunction with Montgomery County,
- Removal of the CCT transit network coding from the Long Range Plan
- Removal of the Anacostia LRT

Table 3-1: Year 2030 Trips (Linked) by Transit Mode – No Build

Access Mode	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Bus							
Walk	149,006	63,632	83,804	49,107	42,604	26,249	414,402
Park-n-Ride	14,278	788	1,784	1,447	2,030	750	21,077
Kiss-n-Ride	7,057	1,378	1,988	998	724	262	12,407
Total	*170,341*	*65,798*	*87,576*	*51,552*	*45,358*	*27,261*	*447,886*
Metrorail							
Walk	252,173	68,182	50,200	53,765	64,583	67,272	556,175
Park-n-Ride	162,233	24,855	11,619	16,206	10,014	9,191	234,118
Kiss-n-Ride	46,628	7,043	2,890	3,161	5,593	3,957	69,272
Total	*461,034*	*100,080*	*64,709*	*73,132*	*80,190*	*80,420*	*859,565*
Commuter Rail							
Walk	5,596	322	0	0	0	0	5,918
Park-n-Ride	37,439	866	0	0	0	0	38,305
Kiss-n-Ride	3,591	130	0	0	0	0	3,721
Total	*46,626*	*1,318*	*0*	*0*	*0*	*0*	*47,944*
TOTAL	**678,001**	**167,196**	**152,285**	**124,684**	**125,548**	**107,681**	**1,355,395**

Table 3-2: Year 2030 Background Buses (Total Boardings) – No Build

Route	Boardings
C02	5,960
C04	3,952
F04	5,877
F06	3,701
GO1	85
J01	9,514
J02	6,996
J03	1,924
O1	3,244

Table 3-3: Year 2030 Metrorail (Boardings in Corridor Stations) – No Build

Station	Boardings
Bethesda	18,108
College Park	5,610
Medical Center	10,169
New Carrollton	8,105
Silver Spring	21,384

Table 3-4: Year 2030 Commuter Rail (Boardings in Corridor Stations) – No Build

Station	Boardings
College Park	225
New Carrollton	12
Silver Spring	335

3.2. TSM

Table 3-5: Coding Assumptions - TSM

Assumptions (min.) -- Headway: pk=6, op=12 Runtime: pk=71, op=66

Station	Headed to:	Anode	Bnode	Miles	Time	Speed
Bethesda North	Montgomery Ave.	3048	3079	0.36	3.4	6.4
Montgomery Ave.	Conn. Ave.	3079	3081	0.61	6.4	5.7
Conn. Ave.	Grubb Road	3081	3090	1.52	6.8	13.4
Grubb Road	Silver Spring T.C.	3093	3101	1.41	12.7	6.7
Silver Spring T.C.	Fenton St.	19028	19027	0.43	4.6	5.6
Fenton St.	Sligo Creek Parkway	3179	3109	0.87	4.8	10.9
Sligo Creek Parkway	Piney Branch & Arliss St.	3132	3080	0.74	2.9	15.3
Piney Branch & Arliss St.	Piney Branch & University	3138	3135	0.20	4.9	2.4
Piney Branch & University	University & Carroll Ave.	3135	3137	0.39	6.6	3.5
University & Carroll Ave.	Takoma/Langley T.C.	3137	3146	0.49	4.8	6.1
Takoma/Langley T.C.	Riggs Rd.	4005	4017	0.57	5.8	5.9
Riggs Rd.	Adelphi Rd.	4016	4029	1.27	6.0	12.7
Adelphi Rd.	UMD Campus Center	4049	4979	0.39	4.0	5.9
UMD Campus Center	UMD East	4979	4066	1.02	8.6	7.1
UMD East	College Park	4066	4082	1.10	2.0	33.0
College Park	River Rd.	4083	4090	0.84	2.0	25.2
River Rd.	Riverdale Park	4090	4091	0.43	5.5	4.7
Riverdale Park	Riverdale Road	4091	4103	0.96	4.4	13.1
Riverdale Road	Annapolis Rd.	4130	4129	1.47	4.7	18.8
Annapolis Rd.	New Carrollton	4135	4126	0.90	4.6	11.7

Table 3-6: Year 2030 Trips (Linked) by Transit Mode – TSM

Access Mode	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Bus							
Walk	152,024	63,364	86,292	48,812	43,826	26,006	420,325
Park-n-Ride	14,469	767	1,779	1,428	1,985	723	21,151
Kiss-n-Ride	6,856	1,393	1,997	999	676	248	12,169
Total	*173,349*	*65,524*	*90,068*	*51,239*	*46,487*	*26,978*	*453,645*
Metrorail							
Walk	253,357	69,223	52,739	52,770	64,210	69,210	561,508
Park-n-Ride	158,630	25,633	11,905	16,041	10,051	8,542	230,802
Kiss-n-Ride	46,343	6,854	2,826	3,093	5,648	3,884	68,648
Total	*458,330*	*101,710*	*67,470*	*71,903*	*79,909*	*81,635*	*860,958*
Commuter Rail							
Walk	8,081	250	0	0	0	0	8,331
Park-n-Ride	36,440	707	0	0	0	0	37,147
Kiss-n-Ride	3,402	104	0	0	0	0	3,505
Total	*47,922*	*1,061*	*0*	*0*	*0*	*0*	*48,983*
TOTAL	**679,602**	**168,295**	**157,538**	**123,143**	**126,396**	**108,613**	**1,363,586**

Table 3-7: User Benefits - TSM

Description	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Total User Benefits	38,444	200,665	11,940	121,813	5,122	37,040	415,024
Capped User Benefits	37,783	196,711	9,236	116,416	4,930	36,373	401,449
Percent of Total	9.4%	49.0%	2.3%	29.0%	1.2%	9.1%	100.0%
Percent Capped	1.7%	2.0%	22.6%	4.4%	3.7%	1.8%	3.3%

Table 3-8: Year 2030 Background Buses (Total Boardings) - TSM

Route	Boardings
C02	4,952
C04	3,860
F04	4,506
F06	2,837
GO17	64
J01	9,313
J02	5,765
J03	1,821

Table 3-9: Year 2030 Metrorail (Boardings in Corridor Stations) - TSM

Station	Boardings
Bethesda	18,373
College Park	5,266
Medical Center	10,200
New Carrollton	7,969
Silver Spring	20,869

Table 3-10: Year 2030 Commuter Rail (Boardings in Corridor Stations) - TSM

Station	Boardings
College Park	21
New Carrollton	12
Silver Spring	331

3.3. Low Investment BRT

Table 3-11: Coding Assumptions - Low Investment BRT

Assumptions (min.) -- Headway: pk=6, op=12 Runtime: 73

Station	Headed to:	Anode	Bnode	Miles	Time	Speed
Bethesda North	Medical Center	7681	7682	0.82	4.7	10.5
Medical Center	Connecticut Avenue North	7682	7661	1.15	6.0	11.5
Connecticut Avenue North	Lyttonsville	7661	7662	1.29	5.2	14.9
Lyttonsville	16th Street	7662	7663	0.77	2.4	19.3
16th Street	SSTC North	7663	7664	0.69	6.2	6.7
SSTC North	Fenton Street North	7664	7665	0.24	4.6	3.1
Fenton Street North	Dale Drive	7665	7666	0.55	2.8	11.8
Dale Drive	Manchester Place	7666	7683	0.53	2.3	13.8
Manchester Place	Arliss Street	7683	7667	0.43	4.8	5.4
Arliss Street	Gilbert Street	7667	7668	0.37	6.6	3.4
Gilbert Street	Takoma Langley Transit Ctr	7668	7670	0.77	4.8	9.6
Takoma Langley Transit Ctr	Riggs Road	7670	7671	0.6	5.6	6.4
Riggs Road	Adelphi Road	7671	7672	1.38	5.7	14.5
Adelphi Road	U of MD Campus Center	7672	7673	0.59	3.7	9.6
U of MD Campus Center	U of MD Route 1	7673	7674	0.55	8.6	3.8
U of MD Route 1	College Park - U of MD [East]	7674	7675	0.87	2.2	23.7
College Park - U of MD [East]	River Road	7675	7676	0.72	1.8	24.0
River Road	Riverdale Park	7676	7677	0.58	5.4	6.4
Riverdale Park	Riverdale Road	7677	7678	1.12	4.0	16.8
Riverdale Road	Annapolis Road	7678	7679	1.14	4.0	17.1
Annapolis Road	New Carrollton	7679	7680	0.81	4.4	11.0

Table 3-12: Year 2030 Trips (Linked) by Transit Mode - Low Investment BRT

Access Mode	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Bus							
Walk	147,059	58,781	84,118	45,717	42,889	24,871	403,435
Park-n-Ride	14,312	767	1,768	1,386	1,968	711	20,911
Kiss-n-Ride	6,785	1,393	1,985	973	670	244	12,050
Total	*168,155*	*60,941*	*87,872*	*48,076*	*45,527*	*25,826*	*436,396*
Metrorail							
Walk	254,149	67,605	52,936	52,809	64,817	69,288	561,603
Park-n-Ride	157,653	25,666	11,534	15,697	9,984	8,428	228,962
Kiss-n-Ride	46,226	6,849	2,788	3,077	5,661	3,891	68,492
Total	*458,028*	*100,120*	*67,257*	*71,583*	*80,463*	*81,606*	*859,057*
Commuter Rail							
Walk	6,713	3,760	3,261	1,917	1,148	831	17,630
Park-n-Ride	2,382	739	662	462	133	105	4,482
Kiss-n-Ride	185	47	26	5	16	5	285
Total	*9,280*	*4,547*	*3,949*	*2,383*	*1,297*	*941*	*22,397*
BRT							
Walk	6,713	3,760	3,261	1,917	1,148	831	17,630
Park-n-Ride	2,382	739	662	462	133	105	4,482
Kiss-n-Ride	185	47	26	5	16	5	285
Total	*9,280*	*4,547*	*3,949*	*2,383*	*1,297*	*941*	*22,397*
Total	**683,393**	**166,599**	**159,078**	**122,043**	**127,287**	**108,373**	**1,366,773**

Table 3-13: Year 2030 Boardings (Station to Station) - Low Investment BRT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Total
1: Bethesda No	0	283	88	42	102	568	9	68	48	124	21	60	10	5	3	4	0	0	0	0	0	0	**1,435**
2: Medical CTR	283	0	214	153	455	1,710	44	237	162	350	61	185	23	11	11	3	0	1	1	0	0	0	**3,904**
3: Conn Ave	88	214	0	5	25	86	1	6	3	6	1	3	0	0	0	0	0	0	0	0	0	0	**438**
4: Lyttonsville	42	153	5	0	10	294	4	12	9	23	4	10	2	1	2	4	0	1	2	0	1	1	**580**
5: 16th Street	102	455	25	10	0	654	4	41	24	44	7	29	4	4	10	12	0	2	4	1	2	3	**1,437**
6: SSTC No	568	1,710	86	294	654	0	384	706	302	175	13	84	3	8	10	0	0	0	0	0	0	0	**4,997**
7: Fenton St	9	44	1	4	4	384	0	11	53	27	8	68	1	9	7	3	0	0	0	0	0	0	**633**
8: Dale Drive	68	237	6	12	41	706	11	0	0	6	2	20	4	3	10	18	1	2	2	0	0	5	**1,154**
9: Manchester Pl	48	162	3	9	24	302	53	0	0	0	0	24	4	4	11	18	2	1	1	0	0	6	**672**
10: Arliss Street	124	350	6	23	44	175	27	6	0	0	0	16	7	4	15	21	4	3	3	1	1	9	**839**
11: Gilbert St	21	61	1	4	7	13	8	2	0	0	0	26	5	7	25	37	20	7	5	1	2	24	**276**
12: Takoma/Langley	60	185	3	10	29	84	68	20	24	16	26	0	17	61	119	201	239	34	28	10	18	121	**1,373**
13: Riggs Rd	10	23	0	2	4	3	1	4	4	7	5	17	0	24	46	93	23	15	10	2	6	49	**348**
14: Adelphi Rd	5	11	0	1	4	8	9	3	4	4	7	61	24	0	0	32	280	8	12	4	7	37	**521**
15: UMD Center	3	11	0	2	10	10	7	10	11	15	25	119	46	0	0	79	875	24	46	9	26	160	**1,488**
16: UMD US 1	4	3	0	4	12	0	3	18	18	21	37	201	93	32	79	0	2,953	109	138	40	88	539	**4,392**
17: College Park	0	0	0	0	0	0	0	1	2	4	20	239	23	280	875	2,953	0	983	858	250	324	1,104	**7,916**
18: River Rd	0	1	0	1	2	0	0	2	1	3	7	34	15	8	24	109	983	0	12	15	27	203	**1,447**
19: Riverdale Park	0	1	0	2	4	0	0	2	1	3	5	28	10	12	46	138	858	12	0	17	22	279	**1,440**
20: Riverdale Rd	0	0	0	0	1	0	0	0	0	1	1	10	2	4	9	40	250	15	17	0	6	149	**505**
21: Annapolis Rd	0	0	0	1	2	0	0	0	0	1	2	18	6	7	26	88	324	27	22	6	0	407	**937**
22: New Carrollton	0	0	0	1	3	0	0	5	6	9	24	121	49	37	160	539	1,104	203	279	149	407	0	**3,096**
Total	**1,435**	**3,904**	**438**	**580**	**1,437**	**4,997**	**633**	**1,154**	**672**	**839**	**276**	**1,373**	**348**	**521**	**1,488**	**4,392**	**7,916**	**1,447**	**1,440**	**505**	**937**	**3,096**	**39,828**

Table 3-14: Year 2030 User Benefits - Low Investment BRT

Description	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Total User Benefits	268,103	(76,643)	80,937	(45,684)	37,204	(8,105)	255,812
Capped User Benefits	261,168	(81,125)	71,934	(55,489)	35,235	(9,237)	222,486
Percent of Total	117.4%	-36.5%	32.3%	-24.9%	15.8%	-4.2%	100.0%
Percent Capped	2.6%	0.0%	11.1%	0.0%	5.3%	0.0%	13.0%

Table 3-15: Year 2030 Background Buses (Total Boardings) – Low Investment BRT

Route	Boardings
C02	5,058
C04	3,805
F04	3,375
F06	1,871
GO17	33
J01	8,820
J02	6,062
J03	1,773

Table 3-16: Year 2030 Metrorail (Boardings in Corridor Stations) – Low Investment BRT

Station	Boardings
Bethesda	17,313
College Park	9,938
Medical Center	12,431
New Carrollton	8,359
Silver Spring	20,779

Table 3-17: Year 2030 Commuter Rail (Boardings in Corridor Stations) – Low Investment BRT

Station	Boardings
College Park	65
New Carrollton	14
Silver Spring	315

3.4. Medium Investment BRT

Table 3-18: Coding Assumptions - Medium Investment BRT

Assumptions (min.) -- Headway: pk=6, op=12 Runtime: 64

Station	Headed to:	Anode	Bnode	Miles	Time	Speed
Bethesda North	Bethesda South	7681	7660	0.21	5.2	2.4
Bethesda South	Connecticut Avenue South	7660	7685	1.31	5.5	14.3
Connecticut Avenue South	Lyttonsville	7685	7662	1.37	3.1	26.5
Lyttonsville	16th Street	7662	7663	0.77	2.4	19.3
16th Street	SSTC South	7663	7686	0.65	2.1	18.6
SSTC South	Fenton Street North	7686	7665	0.33	3.1	6.4
Fenton Street North	Dale Drive	7665	7666	0.55	3.0	11.0
Dale Drive	Manchester Place	7666	7683	0.53	2.3	13.8
Manchester Place	Arliss Street	7683	7667	0.43	4.7	5.5
Arliss Street	Gilbert Street	7667	7668	0.37	3.4	6.5
Gilbert Street	Takoma Langley Transit Ctr	7668	7670	0.77	2.3	20.1
Takoma Langley Transit Ctr	Riggs Road	7670	7671	0.6	2.7	13.3
Riggs Road	Adelphi Road	7671	7672	1.38	5.6	14.8
Adelphi Road	U of MD Campus Center	7672	7673	0.59	2.9	12.2
U of MD Campus Center	East Campus	7673	7689	0.53	3.0	10.6
East Campus	College Park - U of MD [West]	7689	7690	0.76	3.0	15.2
College Park - U of MD [West]	River Road	7690	7676	0.7	1.9	22.1
River Road	Riverdale Park	7676	7677	0.58	4.3	8.1
Riverdale Park	Riverdale Road	7677	7678	1.12	4.7	14.3
Riverdale Road	Annapolis Road	7678	7679	1.14	3.6	19.0
Annapolis Road	New Carrollton	7679	7680	0.81	3.8	12.8

Table 3-19: Year 2030 Trips (Linked) by Transit Mode - Medium Investment BRT

Access Mode	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Bus							
Walk	145,548	58,229	83,603	45,440	42,530	24,699	400,049
Park-n-Ride	14,213	765	1,766	1,384	1,942	710	20,779
Kiss-n-Ride	6,741	1,390	1,982	972	663	244	11,992
Total	*166,502*	*60,384*	*87,350*	*47,795*	*45,135*	*25,654*	*432,820*
Metrorail							
Walk	254,633	67,588	52,976	52,888	65,358	69,563	563,005
Park-n-Ride	157,432	25,594	11,433	15,514	10,031	8,366	228,371
Kiss-n-Ride	46,209	6,844	2,789	3,090	5,670	3,905	68,506
Total	*458,274*	*100,025*	*67,197*	*71,493*	*81,058*	*81,835*	*859,882*
Commuter Rail							
Walk	8,128	205	0	0	0	0	8,333
Park-n-Ride	36,411	684	0	0	0	0	37,095
Kiss-n-Ride	3,408	101	0	0	0	0	3,510
Total	*47,947*	*990*	*0*	*0*	*0*	*0*	*48,937*
BRT							
Walk	8,965	4,796	4,299	2,570	1,381	1,109	23,120
Park-n-Ride	3,011	834	781	574	257	140	5,596
Kiss-n-Ride	236	54	31	6	15	6	349
Total	*12,212*	*5,684*	*5,111*	*3,150*	*1,653*	*1,255*	*29,064*
TOTAL	**684,935**	**167,083**	**159,659**	**122,438**	**127,846**	**108,743**	**1,370,703**

Table 3-20: Year 2030 Boardings (Station to Station) - Medium Investment BRT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Total
1: Bethesda No	0	121	56	72	363	3,175	58	302	238	426	182	327	94	21	19	41	2	8	15	4	8	0	**5,532**
2: Bethesda So	121	0	102	112	186	1,605	20	55	18	35	9	43	5	5	36	33	0	2	0	0	0	1	**2,388**
3: Conn Ave	56	102	0	11	29	287	3	34	23	27	26	37	10	4	7	15	0	1	1	0	0	1	**674**
4: Lyttonsville	72	112	11	0	9	377	6	17	11	19	12	16	4	2	4	7	0	1	2	0	2	4	**688**
5: 16th St	363	186	29	9	0	987	11	61	29	41	31	46	11	6	19	31	1	3	5	2	2	12	**1,885**
6: SSTC So	3,175	1,605	287	377	987	126	390	719	345	143	114	226	30	32	51	46	0	2	3	1	2	10	**8,671**
7: Fenton St	58	20	3	6	11	390	0	11	23	5	14	36	6	4	3	13	0	2	1	0	1	3	**610**
8: Dale Drive	302	55	34	17	61	719	11	0	0	5	5	26	6	5	12	25	5	2	3	0	1	10	**1,304**
9: Manchester Pl	238	18	23	11	29	345	23	0	0	0	3	30	7	5	14	28	9	2	2	0	1	11	**799**
10: Arliss St	426	35	27	19	41	143	5	5	0	0	0	41	13	8	23	43	25	5	5	1	2	20	**887**
11: Gilbert St	182	9	26	12	31	114	14	5	3	0	0	41	9	12	49	143	88	20	15	4	9	81	**867**
12: Takoma/Langley	327	43	37	16	46	226	36	26	30	41	41	0	44	64	148	322	582	43	41	13	25	174	**2,325**
13: Riggs Rd	94	5	10	4	11	30	6	6	7	13	9	44	0	22	60	98	65	14	12	3	7	54	**574**
14: Adelphi Rd	21	5	4	2	6	32	4	5	5	8	12	64	22	0	0	55	305	9	14	4	8	47	**632**
15: UMD	19	36	7	4	19	51	3	12	14	23	49	148	60	0	0	123	1,157	28	58	14	32	205	**2,062**
16: East Campus	41	33	15	7	31	46	13	25	28	43	143	322	98	55	123	0	2,492	99	129	39	89	552	**4,423**
17: College Park	2	0	0	0	1	0	0	5	9	25	88	582	65	305	1,157	2,492	25	950	861	252	344	1,370	**8,533**
18: River Rd	8	2	1	1	3	2	2	2	2	5	20	43	14	9	28	99	950	12	13	15	28	218	**1,477**
19: Riverdale Park	15	0	1	2	5	3	1	3	2	5	15	41	12	14	58	129	861	13	0	16	22	298	**1,516**
20: Riverdale Rd	4	0	0	0	2	1	0	0	0	1	4	13	3	4	14	39	252	15	16	0	6	153	**527**
21: Annapolis Rd	8	0	0	2	2	2	1	1	1	2	9	25	7	8	32	89	344	28	22	6	0	391	**980**
22: New Carrollton	0	1	1	4	12	10	3	10	11	20	81	174	54	47	205	552	1,370	218	298	153	391	135	**3,750**
Total	**5,532**	**2,388**	**674**	**688**	**1,885**	**8,671**	**610**	**1,304**	**799**	**887**	**867**	**2,325**	**574**	**632**	**2,062**	**4,423**	**8,533**	**1,477**	**1,516**	**527**	**980**	**3,750**	**51,104**

Table 3-21: Year 2030 User Benefits - Medium Investment BRT

Description	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Total User Benefits	383,142	(41,805)	112,277	(26,406)	62,354	6,416	495,978
Capped User Benefits	373,866	(47,668)	98,315	(39,128)	59,703	4,985	450,073
Percent of Total	83.1%	-10.6%	21.8%	-8.7%	13.3%	1.1%	100.0%
Percent Capped	2.4%	0.0%	12.4%	0.0%	4.3%	22.3%	9.3%

Table 3-22: Year 2030 Background Buses (Total Boardings) – Medium Investment BRT

Route	Boardings
C02	4,857
C04	3,716
F04	3,133
F06	1,838
GO17	33
J01	8,295
J02	5,147
J03	1,574

Table 3-23: Year 2030 Metrorail (Boardings in Corridor Stations) – Medium Investment BRT

Station	Boardings
Bethesda	20,920
College Park	10,271
Medical Center	10,577
New Carrollton	8,248
Silver Spring	20,890

Table 3-24: Year 2030 Commuter Rail (Boardings in Corridor Stations) - Medium Investment BRT

Station	Boardings
College Park	77
New Carrollton	16
Silver Spring	299

3.5. High Investment BRT

Table 3-25: Coding Assumptions - High Investment BRT

Assumptions (min.) -- Headway: pk=6, op=12 Runtime: 57

Station	Headed to:	Anode	Bnode	Miles	Time	Speed
Bethesda North	Bethesda South	7681	7660	0.21	5.2	2.4
Bethesda South	Connecticut Avenue South	7660	7685	1.31	5.5	14.3
Connecticut Avenue South	Lyttonsville	7685	7662	1.37	3.1	26.5
Lyttonsville	16th Street	7662	7663	0.77	2.4	19.3
16th Street	SSTC South	7663	7686	0.65	2.1	18.6
SSTC South	Dale Drive	7686	7666	0.88	3.6	14.7
Dale Drive	Manchester Place	7666	7683	0.53	2.1	15.1
Manchester Place	Arliss Street	7683	7667	0.43	1.4	18.4
Arliss Street	Gilbert Street	7667	7668	0.37	4.0	5.6
Gilbert Street	Takoma Langley Transit Ctr	7668	7670	0.77	2.2	21.0
Takoma Langley Transit Ctr	Riggs Road	7670	7671	0.6	1.7	21.2
Riggs Road	Adelphi Road	7671	7672	1.38	3.1	26.7
Adelphi Road	U of MD Campus Center	7672	7673	0.59	2.6	13.6
U of MD Campus Center	East Campus	7673	7689	0.53	2.9	11.0
East Campus	College Park - U of MD [West]	7689	7690	0.76	3.0	15.2
College Park - U of MD [West]	River Road	7690	7676	0.7	1.9	22.1
River Road	Riverdale Park	7676	7677	0.58	3.2	10.9
Riverdale Park	Riverdale Road	7677	7678	1.12	2.9	23.2
Riverdale Road	Annapolis Road	7678	7679	1.14	3.5	19.5
Annapolis Road	New Carrollton	7679	7680	0.81	3.5	13.9

Table 3-26: Year 2030 Trips (Linked) - High Investment BRT

Access Mode	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Bus							
Walk	44,941	57,950	83,323	45,304	42,456	24,668	398,641
Park-n-Ride	14,194	764	1,763	1,383	1,940	710	20,754
Kiss-n-Ride	6,733	1,388	1,979	9711	662	244	11,978
Total	*165,868*	*60,102*	*87,065*	*47,658*	*45,058*	*25,622*	*431,373*
Metrorail							
Walk	254,448	67,399	52,979	52,985	65,394	69,595	562,800
Park-n-Ride	157,256	25,547	11,451	15,579	10,039	8,371	228,243
Kiss-n-Ride	46,182	6,836	2,789	3,091	5,672	3,907	68,477
Total	*457,886*	*99,782*	*67,220*	*71,654*	*81,105*	*81,873*	*859,520*
Commuter Rail							
Walk	8,158	206	0	0	0	0	8,364
Park-n-Ride	36,424	685	0	0	0	0	37,109
Kiss-n-Ride	3,410	102	0	0	0	0	3,512
Total	*47,992*	*992*	*0*	*0*	*0*	*0*	*48,984*
BRT							
Walk	10,705	5,718	4,928	2,902	1,557	1,214	27,023
Park-n-Ride	3,154	870	790	550	282	139	5,785
Kiss-n-Ride	254	58	33	6	16	6	374
Total	*14,112*	*6,647*	*5,750*	*3,458*	*1,856*	*1,359*	*33,182*
TOTAL	**685,859**	**167,523**	**160,035**	**122,770**	**128,018**	**108,855**	**1,373,060**

Table 3-27: Year 2030 Boardings (Station to Station) - High Investment BRT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total
1: Bethesda No	0	121	56	72	362	3,043	315	251	739	214	389	126	33	37	91	11	20	42	15	24	20	**5,981**
2: Bethesda So	121	0	102	112	186	1,612	57	13	65	10	51	8	10	82	70	3	6	1	0	1	5	**2,515**
3: Conn Ave So	56	102	0	11	29	282	37	25	51	33	46	13	5	12	26	2	3	8	3	4	4	**752**
4: Lyttonsville	72	112	11	0	9	372	18	12	29	14	18	6	2	5	11	2	2	3	1	2	8	**709**
5: 16th St	362	186	29	9	0	978	65	30	65	37	55	16	8	25	48	7	5	7	2	4	23	**1,961**
6: SSTC So	3,043	1,612	282	372	978	510	769	620	542	346	514	120	80	193	240	4	21	26	9	16	90	**10,387**
8: Dale Drive	315	57	37	18	65	769	0	0	15	16	29	8	6	14	29	12	3	4	1	2	17	**1,417**
9: Manchester Road	251	13	25	12	30	620	0	0	0	12	33	9	6	15	32	22	3	3	1	1	16	**1,104**
10: Arliss St	739	65	51	29	65	542	15	0	0	0	40	13	10	25	56	38	6	5	1	3	26	**1,729**
11: Gilbert St	214	10	33	14	37	346	16	12	0	0	41	13	17	75	169	130	23	19	6	12	108	**1,295**
12: Takoma/Langley	389	51	46	18	55	514	29	33	40	41	0	57	76	165	365	943	50	49	18	31	242	**3,212**
13: Riggs Rd	126	8	13	6	16	120	8	9	13	13	57	0	31	60	111	120	18	19	5	12	79	**844**
14: Adelphi Rd	33	10	5	2	8	80	6	6	10	17	76	31	0	0	55	264	9	14	5	9	55	**695**
15: UM	37	82	12	5	25	193	14	15	25	75	165	60	0	0	122	986	27	56	19	35	244	**2,197**
16: East Campus	91	70	26	11	48	240	29	32	56	169	365	111	55	122	0	2,227	96	121	51	95	639	**4,654**
17: College Park	11	3	2	2	7	4	12	22	38	130	943	120	264	986	2,227	24	884	825	355	494	1,672	**9,025**
18: River Rd	20	6	3	2	5	21	3	3	6	23	50	18	9	27	96	884	12	21	16	30	272	**1,527**
19: Riverdale Park	42	1	8	3	7	26	4	3	5	19	49	19	14	56	121	825	21	0	18	24	333	**1,598**
20: Riverdale Rd	15	0	3	1	2	9	1	1	1	6	18	5	5	19	51	355	16	18	0	6	146	**678**
21: Annapolis Rd	24	1	4	2	4	16	2	1	3	12	31	12	9	35	95	494	30	24	6	0	317	**1,122**
22: New Carrollton	20	5	4	8	23	90	17	16	26	108	242	79	55	244	639	1,672	272	333	146	317	136	**4,452**
Total	**5,981**	**2,515**	**752**	**709**	**1,961**	**10,387**	**1,417**	**1,104**	**1,729**	**1,295**	**3,212**	**844**	**695**	**2,197**	**4,654**	**9,025**	**1,527**	**1,598**	**678**	**1,122**	**4,452**	**57,854**

Table 3-28: Year 2030 User Benefits - High Investment BRT

Description	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Total User Benefits	452,969	(9,264)	132,337	(10,503)	69,041	10,483	645,063
Capped User Benefits	442,243	(15,948)	116,728	(24,370)	65,588	8,802	593,043
Percent of Total	74.6%	-2.7%	19.7%	-4.1%	11.1%	1.5%	100.0%
Percent Capped	2.4%	0.0%	11.8%	0.0%	5.0%	16.0%	8.1%

Table 3-29: Year 2030 Background Buses (Total Boardings) – High Investment BRT

Route	Boardings
C02	4,763
C04	3,589
F04	2,908
F06	1,766
GO17	32
J01	8,269
J02	5,120
J03	1,562

Table 3-30: Year 2030 Metrorail (Boardings in Corridor Stations) – High Investment BRT

Station	Boardings
Bethesda	21,288
College Park	10,468
Medical Center	10,583
New Carrollton	8,223
Silver Spring	21,262

Table 3-31: Year 2030 Commuter Rail (Boardings in Corridor Stations) - High Investment BRT

Station	Boardings
College Park	87
New Carrollton	16
Silver Spring	295

3.6. Low Investment LRT

Table 3-32: Coding Assumptions - Low Investment LRT

Assumptions (min.) -- Headway: pk=6, op=12 Runtime: 59						
Station	**Headed to:**	**Anode**	**Bnode**	**Miles**	**Time**	**Speed**
Bethesda South	Connecticut Avenue South	7660	7685	1.31	4.0	19.7
Connecticut Avenue South	Lyttonsville	7685	7662	1.37	2.3	35.7
Lyttonsville	16th Street	7662	7663	0.77	2.1	22.0
16th Street	SSTC South	7663	7686	0.65	2.8	13.9
SSTC South	Fenton Street South	7686	7687	0.38	3.1	7.4
Fenton Street South	Dale Drive	7687	7666	0.51	3.8	8.1
Dale Drive	Manchester Place	7666	7683	0.53	3.1	10.3
Manchester Place	Arliss Street	7683	7667	0.43	1.4	18.4
Arliss Street	Gilbert Street	7667	7668	0.37	3.8	5.8
Gilbert Street	Takoma Langley Transit Ctr	7668	7670	0.77	2.2	21.0
Takoma Langley Transit Ctr	Riggs Road	7670	7671	0.6	2.4	15.0
Riggs Road	Adelphi Road	7671	7672	1.38	3.3	25.1
Adelphi Road	U of MD Campus Center	7672	7673	0.59	2.9	12.2
U of MD Campus Center	East Campus	7673	7689	0.53	3.0	10.6
East Campus	College Park - U of MD [West]	7689	7690	0.76	3.0	15.2
College Park - U of MD [West]	River Road	7690	7676	0.7	1.9	22.1
River Road	Riverdale Park	7676	7677	0.58	4.6	7.6
Riverdale Park	Riverdale Road	7677	7678	1.12	4.8	14.0
Riverdale Road	Annapolis Road	7678	7679	1.14	3.5	19.5
Annapolis Road	New Carrollton	7679	7680	0.81	3.9	12.5

Table 3-33: Year 2030 Trips (Linked) by Transit Mode - Low Investment LRT

Access Mode	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Bus							
Walk	144,810	57,942	83,317	45,316	42,414	24,637	398,437
Park-n-Ride	14,191	765	1,765	1,384	1,942	710	20,757
Kiss-n-Ride	6,731	1,389	1,981	972	663	244	11,980
Total	*165,733*	*60,096*	*87,063*	*47,672*	*45,018*	*25,591*	*431,174*
Metrorail							
Walk	254,929	67,387	53,028	53,014	65,525	69,769	563,653
Park-n-Ride	157,506	25,576	11,487	15,586	10,064	8,398	228,617
Kiss-n-Ride	46,185	6,838	2,792	3,087	5,674	3,908	68,485
Total	*458,621*	*99,802*	*67,307*	*71,686*	*81,263*	*82,075*	*860,755*
Commuter Rail							
Walk	8,123	204	0	0	0	0	8,327
Park-n-Ride	36,413	684	0	0	0	0	37,098
Kiss-n-Ride	3,408	101	0	0	0	0	3,510
Total	*47,945*	*989*	*0*	*0*	*0*	*0*	*48,935*
LRT							
Walk	10,347	5,702	4,885	2,881	1,593	1,244	26,651
Park-n-Ride	3,186	869	730	525	263	121	5,694
Kiss-n-Ride	277	63	35	7	18	6	405
Total	*13,810*	*6,634*	*5,650*	*3,412*	*1,874*	*1,371*	*32,751*
TOTAL	**686,109**	**167,521**	**160,020**	**122,770**	**128,155**	**109,038**	**1,373,614**

Table 3-34: Year 2030 Boardings (Station to Station) - Low Investment LRT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total
2: Bethesda So	0	304	305	953	6,937	134	407	283	681	329	474	131	44	80	131	7	20	33	10	21	19	11,303
3: Conn Ave So	304	0	12	39	284	3	35	23	38	32	46	12	4	10	19	1	2	6	1	2	1	874
4: Lyttonsville	305	12	0	9	353	6	14	11	24	13	17	4	2	4	8	1	1	3	0	2	5	794
5: 16th St	953	39	9	0	855	11	54	27	49	33	50	12	6	20	38	2	4	6	1	3	14	2,186
6: SSTC So	6,937	284	353	855	0	407	679	309	255	270	426	55	42	86	88	0	6	6	1	3	20	11,082
7: Fenton St So	134	3	6	11	407	0	11	22	21	27	40	9	5	4	15	0	2	2	0	1	4	724
8: Dale Drive	407	35	14	54	679	11	0	0	15	13	29	8	6	13	27	10	3	3	0	1	13	1,341
9: Manchester Pl	283	23	11	27	309	22	0	0	0	12	35	9	6	15	30	21	3	3	0	1	14	824
10: Arliss St	681	38	24	49	255	21	15	0	0	0	49	12	9	23	47	25	5	5	1	2	20	1,281
11: Gilbert St	329	32	13	33	270	27	13	12	0	0	42	8	13	50	145	86	21	15	4	9	85	1,207
12: Tak/Lang	474	46	17	50	426	40	29	35	49	42	0	35	65	148	323	567	43	42	13	26	181	2,651
13: Riggs Rd	131	12	4	12	55	9	8	9	12	8	35	0	25	62	103	78	16	14	3	7	61	664
14: Adelphi Rd	44	4	2	6	42	5	6	6	9	13	65	25	0	0	54	282	9	14	4	8	47	645
15: UMD	80	10	4	20	86	4	13	15	23	50	148	62	0	0	123	1,102	28	59	14	33	216	2,090
16: East Campus	131	19	8	38	88	15	27	30	47	145	323	103	54	123	0	2,429	100	130	40	91	575	4,516
17: College Park	7	1	1	2	0	0	10	21	25	86	567	78	282	1,102	2,429	0	932	848	258	399	1,455	8,503
18: River Rd	20	2	1	4	6	2	3	3	5	21	43	16	9	28	100	932	0	19	15	28	226	1,483
19: Riverdale Park	33	6	3	6	6	2	3	3	5	15	42	14	14	59	130	848	19	0	17	23	309	1,557
20: Riverdale Rd	10	1	0	1	1	0	0	0	1	4	13	3	4	14	40	258	15	17	0	6	157	545
21: Annapolis Rd	21	2	2	3	3	1	1	1	2	9	26	7	8	33	91	399	28	23	6	0	376	1,042
22: New Carroll	19	1	5	14	20	4	13	14	20	85	181	61	47	216	575	1,455	226	309	157	376	0	3,798
Total	**11,303**	**874**	**794**	**2,186**	**11,082**	**724**	**1,341**	**824**	**1,281**	**1,207**	**2,651**	**664**	**645**	**2,090**	**4,516**	**8,503**	**1,483**	**1,557**	**545**	**1,042**	**3,798**	**59,110**

Table 3-35: Year 2030 User Benefits - Low Investment LRT

Description	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Total User Benefits	478,705	(8,484)	131,866	(10,328)	75,702	18,057	685,518
Capped User Benefits	467,783	(14,723)	116,088	(24,464)	71,753	16,114	632,551
Percent of Total	74.0%	-2.3%	18.4%	-3.9%	11.3%	2.5%	100.0%
Percent Capped	2.3%	0.0%	12.0%	0.0%	5.2%	10.8%	7.7%

Table 3-36: Year 2030 Background Buses (Total Boardings) - Low Investment LRT

Route	Boardings
C02	4,846
C04	3,666
F04	3,099
F06	1,835
GO1	32
J01	7,979
J02	4,892
J03	1,453

Table 3-37: Year 2030 Metrorail (Boardings in Corridor Stations) - Low Investment LRT

Station	Boardings
Bethesda	22,120
College Park	10,211
Medical Center	10,822
New Carrollton	8,244
Silver Spring	21,807

Table 3-38: Year 2030 Commuter Rail (Boardings in Corridor Stations) - Low Investment LRT

Station	Boardings
College Park	79
New Carrollton	16
Silver Spring	293

3.7. Medium Investment LRT

Table 3-39: Coding Assumptions - Medium Investment LRT

Assumptions (min.) -- Headway: pk=6, op=12 Runtime: 52

Station	Headed to:	Anode	Bnode	Miles	Time	Speed
Bethesda South	Connecticut Avenue South	7660	7685	1.31	2.4	32.8
Connecticut Avenue South	Lyttonsville	7685	7662	1.37	2.3	35.7
Lyttonsville	16th Street	7662	7663	0.77	2.1	22.0
16th Street	SSTC South	7663	7686	0.65	2.0	19.5
SSTC South	Fenton Street South	7686	7687	0.38	3.1	7.4
Fenton Street South	Dale Drive	7687	7666	0.51	3.1	9.9
Dale Drive	Manchester Place	7666	7683	0.53	2.8	11.4
Manchester Place	Arliss Street	7683	7667	0.43	1.4	18.4
Arliss Street	Gilbert Street	7667	7668	0.37	3.8	5.8
Gilbert Street	Takoma Langley Transit Ctr	7668	7670	0.77	2.2	21.0
Takoma Langley Transit Ctr	Riggs Road	7670	7671	0.6	2.4	15.0
Riggs Road	Adelphi Road	7671	7672	1.38	3.3	25.1
Adelphi Road	U of MD Campus Center	7672	7673	0.59	2.9	12.2
U of MD Campus Center	East Campus	7673	7689	0.53	3.0	10.6
East Campus	College Park - U of MD [West]	7689	7690	0.76	3.0	15.2
College Park - U of MD [West]	River Road	7690	7676	0.7	1.9	22.1
River Road	Riverdale Park	7676	7677	0.58	4.6	7.6
Riverdale Park	Riverdale Road	7677	7678	1.12	4.8	14.0
Riverdale Road	Annapolis Road	7678	7679	1.14	3.5	19.5
Annapolis Road	New Carrollton	7679	7680	0.81	3.9	12.5

Table 3-40: Year 2030 Trips (Linked) by Transit Mode - Medium Investment LRT

Access Mode	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Bus							
Walk	144,551	57,837	83,202	45,262	42,362	24,613	397,828
Park-n-Ride	14,180	764	1,765	1,384	1,941	710	20,743
Kiss-n-Ride	6,727	1,388	1,981	972	662	244	11,974
Total	*165,458*	*59,990*	*86,947*	*47,618*	*44,966*	*25,567*	*430,546*
Metrorail							
Walk	254,998	67,403	53,036	53,085	65,607	69,853	563,982
Park-n-Ride	157,413	25,556	11,464	15,556	10,062	8,393	228,444
Kiss-n-Ride	46,171	6,836	2,793	3,089	5,676	3,910	68,475
Total	*458,582*	*99,795*	*67,293*	*71,730*	*81,345*	*82,155*	*860,901*
Commuter Rail							
Walk	8,111	203	0	0	0	0	8,314
Park-n-Ride	36,422	684	0	0	0	0	37,106
Kiss-n-Ride	3,408	101	0	0	0	0	3,510
Total	*47,942*	*988*	*0*	*0*	*0*	*0*	*48,929*
LRT							
Walk	10,889	5,931	5,120	2,982	1,678	1,302	27,901
Park-n-Ride	3,306	895	761	543	268	127	5,901
Kiss-n-Ride	291	65	36	7	19	6	424
Total	*14,486*	*6,891*	*5,917*	*3,532*	*1,964*	*1,436*	*34,225*
TOTAL	**686,467**	**167,663**	**160,157**	**122,880**	**128,275**	**109,158**	**1,374,601**

Table 3-41: Year 2030 Boardings (Station to Station) - Medium Investment LRT

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Total
2: Bethesda So	0	352	328	1,029	7,843	135	453	304	836	249	505	149	50	133	177	13	28	48	13	26	21	**12,692**
3: Conn Ave	352	0	10	35	283	3	35	24	44	32	46	13	4	9	20	1	3	6	1	3	2	**926**
4: Lyttonsville	328	10	0	9	354	5	17	11	25	14	17	5	2	4	10	1	1	3	1	2	6	**825**
5: 16th St	1,029	35	9	0	909	11	59	28	52	34	51	13	7	22	42	4	4	7	1	3	16	**2,336**
6: SSTC	7,843	283	354	909	0	401	660	305	331	194	399	69	58	144	128	0	8	7	2	4	27	**12,126**
7: Fenton St	135	3	5	11	401	0	11	23	21	27	40	10	5	4	22	1	3	5	1	2	9	**739**
8: Dale Dr	453	35	17	59	660	11	0	0	15	13	29	8	6	14	28	11	3	3	1	1	14	**1,381**
9: Manchester Pl	304	24	11	28	305	23	0	0	0	12	34	9	6	15	31	26	3	3	0	1	15	**850**
10: Arliss St	836	44	25	52	331	21	15	0	0	0	49	13	10	25	54	37	5	5	1	2	21	**1,546**
11: Gilbert St	249	32	14	34	194	27	13	12	0	0	41	9	17	73	158	126	22	17	4	10	90	**1,142**
12: Tak/Lang	505	46	17	51	399	40	29	34	49	41	0	44	74	160	348	867	48	44	14	27	194	**3,031**
13: Riggs Rd	149	13	5	13	69	10	8	9	13	9	44	0	26	65	107	97	18	18	4	10	69	**756**
14: Adelphi Rd	50	4	2	7	58	5	6	6	10	17	74	26	0	0	55	273	9	14	4	8	46	**674**
15: UMD	133	9	4	22	144	4	14	15	25	73	160	65	0	0	122	1,023	27	57	13	32	202	**2,144**
16: East Campus	177	20	10	42	128	22	28	31	54	158	348	107	55	122	0	2,344	97	125	38	86	542	**4,534**
17: College Park	13	1	1	4	0	1	11	26	37	126	867	97	273	1,023	2,344	0	922	828	244	333	1,362	**8,513**
18: River Rd	28	3	1	4	8	3	3	3	5	22	48	18	9	27	97	922	0	19	15	28	218	**1,481**
19: Riverdale Park	48	6	3	7	7	5	3	3	5	17	44	18	14	57	125	828	19	0	16	22	298	**1,545**
20: Riverdale Rd	13	1	1	1	2	1	1	0	1	4	14	4	4	13	38	244	15	16	0	6	155	**534**
21: Annapolis Rd	26	3	2	3	4	2	1	1	2	10	27	10	8	32	86	333	28	22	6	0	400	**1,006**
22: New Carroll	21	2	6	16	27	9	14	15	21	90	194	69	46	202	542	1,362	218	298	155	400	0	**3,707**
Total	**12,692**	**926**	**825**	**2,336**	**12,126**	**739**	**1,381**	**850**	**1,546**	**1,142**	**3,031**	**756**	**674**	**2,144**	**4,534**	**8,513**	**1,481**	**1,545**	**534**	**1,006**	**3,707**	**62,488**

Table 3-42: Year 2030 User Benefits - Medium Investment LRT

Description	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Total User Benefits	509,171	2,544	139,494	(4,831)	81,341	22,949	750,668
Capped User Benefits	498,269	(3,697)	123,509	(19,078)	77,133	20,857	696,993
Percent of Total	71.5%	-0.5%	17.7%	-2.7%	11.1%	3.0%	100.0%
Percent Capped	2.1%	0.0%	11.5%	0.0%	5.2%	9.1%	7.2%

Table 3-43: Year 2030 Background Buses (Total Boardings) - Medium Investment LRT

Route	Boardings
C02	4,799
C04	3,630
F04	3,123
F06	1,836
GO17	32
J01	7,785
J02	4,815
J03	1,434

Table 3-44: Year 2030 Metrorail (Boardings in Corridor Stations) - Medium Investment LRT

Station	Boardings
Bethesda	22,757
College Park	10,180
Medical Center	10,846
New Carrollton	8,246
Silver Spring	21,909

Table 3-45: Year 2030 Commuter Rail (Boardings in Corridor Stations) - Medium Investment LRT

Station	Boardings
College Park	79
New Carrollton	16
Silver Spring	290

3.8. High Investment LRT

Table 3-46: Coding Assumptions – High Investment LRT

Assumptions (min.) -- Headway: pk=6, op=12 Runtime: 46

Station	Headed to:	Anode	Bnode	Miles	Time	Speed
Bethesda South	Connecticut Avenue South	7660	7685	1.31	2.4	32.8
Connecticut Avenue South	Lyttonsville	7685	7662	1.37	2.3	35.7
Lyttonsville	16th Street	7662	7663	0.77	2.1	22.0
16th Street	SSTC South	7663	7686	0.65	2.0	19.5
SSTC South	Dale Drive	7686	7666	0.88	3.6	14.7
Dale Drive	Manchester Place	7666	7683	0.53	2.5	12.7
Manchester Place	Arliss Street	7683	7667	0.43	1.4	18.4
Arliss Street	Gilbert Street	7667	7668	0.37	3.8	5.8
Gilbert Street	Takoma Langley Transit Ctr	7668	7670	0.77	2.1	22.0
Takoma Langley Transit Ctr	Riggs Road	7670	7671	0.6	1.7	21.2
Riggs Road	Adelphi Road	7671	7672	1.38	3.1	26.7
Adelphi Road	U of MD Campus Center	7672	7673	0.59	2.6	13.6
U of MD Campus Center	East Campus	7673	7689	0.53	2.9	11.0
East Campus	College Park - U of MD [West]	7689	7690	0.76	3.0	15.2
College Park - U of MD [West]	River Road	7690	7676	0.7	1.9	22.1
River Road	Riverdale Park	7676	7677	0.58	3.1	11.2
Riverdale Park	Riverdale Road	7677	7678	1.12	2.9	23.2
Riverdale Road	Annapolis Road	7678	7679	1.14	3.3	20.7
Annapolis Road	New Carrollton	7679	7680	0.81	3.6	13.5

Table 3-47: Year 2030 Trips (Linked) by Transit Mode - High Investment LRT

Access Mode	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Bus							
Walk	144,166	57,676	83,015	45,168	42,308	24,592	396,925
Park-n-Ride	14,165	765	1,764	1,385	1,939	710	20,728
Kiss-n-Ride	6,721	1,387	1,979	971	662	244	11,964
Total	*165,052*	*59,827*	*86,757*	*47,525*	*44,909*	*25,546*	*429,617*
Metrorail							
Walk	255,110	67,494	53,089	53,237	65,666	69,902	564,498
Park-n-Ride	157,301	25,526	11,500	15,624	10,076	8,398	228,425
Kiss-n-Ride	46,175	6,840	2,813	3,104	5,684	3,917	68,533
Total	*458,586*	*99,860*	*67,403*	*71,964*	*81,427*	*82,217*	*861,456*
Commuter Rail							
Walk	8,134	204	0	0	0	0	8,337
Park-n-Ride	36,424	685	0	0	0	0	37,109
Kiss-n-Ride	3,408	102	0	0	0	0	3,509
Total	*47,966*	*990*	*0*	*0*	*0*	*0*	*48,956*
LRT							
Walk	11,974	6,326	5,523	3,180	1,805	1,379	30,186
Park-n-Ride	3,371	905	672	465	279	114	5,807
Kiss-n-Ride	308	69	38	7	19	7	448
Total	*15,653*	*7,300*	*6,233*	*3,652*	*2,103*	*1,500*	*36,441*
TOTAL	687,257	167,978	160,393	123,141	128,439	109,263	1,376,470

Table 3-48: Year 2030Boardings (Station to Station) - High Investment LRT

	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Total
2: Bethesda So	0	352	329	1,033	7,922	479	350	1,095	271	589	180	57	161	275	32	37	61	25	43	62	**13,353**
3: Conn Ave	352	0	10	35	283	39	27	61	36	51	15	5	11	26	2	4	8	3	5	10	**983**
4: Lyttonsville	329	10	0	9	366	19	13	32	15	19	6	2	5	11	2	2	3	1	2	8	**854**
5: 16th Street	1,033	35	9	0	913	65	31	69	38	57	16	8	24	49	8	5	8	2	4	25	**2,399**
6: SSTC	7,922	283	366	913	0	764	593	679	345	859	125	81	199	247	4	23	31	9	18	113	**13,574**
8: Dale Dr	479	39	19	65	764	0	0	15	16	30	8	6	14	30	12	3	4	1	2	17	**1,524**
9: Manchester Pl	350	27	13	31	593	0	0	0	12	34	9	6	15	32	22	3	3	1	1	16	**1,168**
10: Arliss Street	1,095	61	32	69	679	15	0	0	0	49	13	10	26	57	39	6	5	1	3	27	**2,187**
11: Gilbert Street	271	36	15	38	345	16	12	0	0	42	13	17	75	170	131	23	20	6	12	112	**1,354**
12: Tak/Langley	589	51	19	57	859	30	34	49	42	0	55	76	165	366	896	50	50	18	32	245	**3,683**
13: Riggs Rd	180	15	6	16	125	8	9	13	13	55	0	32	60	111	113	18	19	5	12	81	**891**
14: Adelphi Rd	57	5	2	8	81	6	6	10	17	76	32	0	0	55	262	9	14	5	9	56	**710**
15: UMD	161	11	5	24	199	14	15	26	75	165	60	0	0	122	966	27	56	19	35	247	**2,227**
16: East Campus	275	26	11	49	247	30	32	57	170	366	111	55	122	0	2,160	96	121	51	96	650	**4,725**
17: College Park	32	2	2	8	4	12	22	39	131	896	113	262	966	2,160	0	874	819	351	501	1,703	**8,897**
18: River Rd	37	4	2	5	23	3	3	6	23	50	18	9	27	96	874	0	26	17	31	276	**1,530**
19: Riverdale Park	61	8	3	8	31	4	3	5	20	50	19	14	56	121	819	26	0	18	24	338	**1,628**
20: Riverdale Rd	25	3	1	2	9	1	1	1	6	18	5	5	19	51	351	17	18	0	6	147	**686**
21: Annapolis Rd	43	5	2	4	18	2	1	3	12	32	12	9	35	96	501	31	24	6	0	326	**1,162**
22: New Carroll	62	10	8	25	113	17	16	27	112	245	81	56	247	650	1,703	276	338	147	326	0	**4,459**
Total	**13,353**	**983**	**854**	**2,399**	**13,574**	**1,524**	**1,168**	**2,187**	**1,354**	**3,683**	**891**	**710**	**2,227**	**4,725**	**8,897**	**1,530**	**1,628**	**686**	**1,162**	**4,459**	**67,994**

Table 3-49: Year 2030 User Benefits - High Investment LRT

Description	HBW-PK	HBW-OP	HBO-PK	HBO-OP	NHB-PK	NHB-OP	TOTAL
Total User Benefits	569,199	25,565	152,528	7,830	87,845	26,828	869,795
Capped User Benefits	556,873	18,466	135,850	(7,593)	82,616	24,427	810,639
Percent of Total	68.7%	2.3%	16.8%	-0.9%	10.2%	3.0%	100.0%
Percent Capped	2.2%	27.8%	10.9%	0.0%	6.0%	8.9%	6.8%

Table 3-50: Year 2030 Background Buses (Total Boardings) - High Investment LRT

Route	Boardings
C02	4,764
C04	3,566
F04	2,922
F06	1,782
GO1	30
J01	7,786
J02	4,805
J03	1,431

Table 3-51: Year 2030 Metrorail (Boardings in Corridor Stations) - High Investment LRT

Station	Boardings
Bethesda	23,256
College Park	10,325
Medical Center	10,860
New Carrollton	8,238
Silver Spring	22,715

Table 3-52: Year 2030 Commuter Rail (Boardings in Corridor Stations) - High Investment LRT

Station	Boardings
College Park	87
New Carrollton	17
Silver Spring	292

3.9. Comparative Summary

Information is provided below on the background bus system as well as additional information formatted to show comparisons across alternatives.

3.10. Background Bus Assumptions

Bus routes listed in the following table were diverted to connect to the given stations by alternative in order to provide feeder service to the Purple Line For the 2030 networks.

Table 3-53: Background Bus

Stations	TSM	Low Inv. BRT	All Others
Connecticut Avenue			J1, J2, J3
Lyttonsville Place		RO1, RO4	RO1, RO4
Grubb Road	RO2 (AM)		
Arliss/Piney Branch	RO 12, RO 13	RO 12, RO 13	RO 12, RO 13

The J4 bus route, present in the 2000 base year has been discontinued and removed from all future year forecast networks. In addition, route RO15 has been removed. For the Low BRT, route J1 has also been removed to eliminate redundant service.

Table 3-54: Year 2030 Trips, Boardings and User Benefits

Version 3	TSM	Low Inv. BRT	Med. Inv. BRT	High Inv. BRT	Low Inv. LRT	Med. Inv. LRT	High Inv. LRT
Total User Benefits (daily minutes)	414,741	255,812	495,978	645,063	685,518	750,668	869,795
Capped User Benefits (daily minutes)	401,166	222,486	450,073	593,043	632,551	696,993	810,639
Percent Capped	3.3%	13.0%	9.3%	8.1%	7.7%	7.2%	6.8%
Baseline Linked Transit Trips	1,366,361	1,363,580	1,363,580	1,363,580	1,363,580	1,363,580	1,363,580
Build Linked Transit Trips	1,363,580	1,366,773	1,370,703	1,373,060	1,373,614	1,374,601	1,376,470
LRT/BRT Linked Trips	0	22,397	29,064	33,182	32,751	34,225	36,441
Boardings							
Purple Line Boardings		22,201	29,329	33,795	32,459	33,922	36,114
Purple Line Boardings in MR Paths		16,689	21,075	23,750	25,307	27,165	30,494
Purple Line Boardings in CR Paths		1,085	1,350	1,292	1,495	1,536	1,465

Table 3-55: Year 2030 Background Bus Boardings (Total Daily)

Route	NB	TSM	Low Inv. BRT	Med. Inv. BRT	High Inv. BRT	Low Inv. LRT	Med. Inv. LRT	High Inv. LRT
C02	5,960	4,952	5,058	4,857	4,763	4,846	4,799	4,764
C04	3,952	3,860	3,805	3,716	3,589	3,666	3,630	3,566
F04	5,877	4,506	3,375	3,133	2,908	3,099	3,123	2,922
F06	3,701	2,837	1,871	1,838	1,766	1,835	1,836	1,782
GO17	85	64	33	33	32	32	32	30
J01	9,514	9,313	8,820	8,295	8,269	7,979	7,785	7,786
J02	6,996	5,765	6,062	5,147	5,120	4,892	4,815	4,805
J03	1,924	1,821	1,773	1,574	1,562	1,453	1,434	1,431
RO15	3,244							

Table 3-56: Year 2030 Metrorail Station Boardings (Total Daily)

Station	NB	TSM	Low Inv. BRT	Med. Inv. BRT	High Inv. BRT	Low Inv. LRT	Med. Inv. LRT	High Inv. LRT
Bethesda	18,108	18,373	17,313	20,920	21,288	22,120	22,757	23,256
College Park	5,610	5,266	9,938	10,271	10,468	10,211	10,180	10,325
Medical Center	10,169	10,200	12,431	10,577	10,583	10,822	10,846	10,860
New Carrollton	8,105	7,969	8,359	8,248	8,223	8,244	8,246	8,238
Silver Spring	21,384	20,869	20,779	20,890	21,262	21,807	21,909	22,715

Table 3-57: Year 2030 Commuter Rail Station Boardings (Total Daily)

Station	NB	TSM	Low Inv. BRT	Med. Inv. BRT	High Inv. BRT	Low Inv. LRT	Med. Inv. LRT	High Inv. LRT
College Park	225	21	65	77	87	79	79	87
New Carrollton	12	12	14	16	16	16	16	17
Silver Spring	335	331	315	299	295	293	290	292

3.11. Non-Included (Mode Specific) Attributes

Table 3-58: Non-Included Attributes

Non-included attribute	Prem. only	Prem. + local	Prem. only	Prem. + local	Prem. only	Prem. + local	Prem. only	Prem. + local	Prem. only	Prem. + local	Prem. only	Prem. + local
Guideway-like characteristics	**1.0**	**0.3**	**3.3**	**1.2**	**5.4**	**2.0**	**3.0**	**1.1**	**3.9**	**1.4**	**5.4**	**2.0**
- reliability of vehicle arrival	0.0	0.0	1.3	0.7	2.4	1.2	1.6	0.8	1.7	0.9	2.4	1.2
- branding/visibility/learnability	0.5	0.3	1.0	0.5	1.5	0.8	0.5	0.3	1.0	0.5	1.5	0.8
- schedule-free service	0.5	0.0	1.0	0.0	1.5	0.0	0.9	0.0	1.2	0.0	1.5	0.0
Span of good service	**1.0**	**0.0**	**1.5**	**0.0**	**2.0**	**0.0**	**1.0**	**0.0**	**1.5**	**0.0**	**2.0**	**0.0**
Passenger amenities	**2.0**	**1.5**	**2.5**	**2.0**	**3.0**	**2.5**	**2.0**	**1.5**	**2.5**	**2.0**	**3.0**	**2.5**
- stations/stops	1.0	0.5	1.5	1.0	2.0	1.5	1.0	0.5	1.5	1.0	2.0	1.5
- dynamic schedule information	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
TOTAL	**4.0**	**1.8**	**7.3**	**3.2**	**10.4**	**4.5**	**6.0**	**2.6**	**7.9**	**3.4**	**10.4**	**4.5**
IVT coefficient	0.95	0.98	0.92	0.97	0.90	0.96	0.95	0.98	0.92	0.97	0.90	0.96

Table 3-59: Year 2030 User Benefits Effects of Non-included Attributes

	TSM	Low Inv. BRT	Med. Inv. BRT	High Inv. BRT	Low Inv. LRT	Med. Inv. LRT	High Inv. LRT
Capped User Benefits (minutes)	401,166	222,486	450,073	593,043	632,551	696,993	810,639
Capped User w/ Non-Included Effects		301,140	621,000	856,800	779,400	902,640	1,088,460
Percent Increase		35%	38%	44%	23%	30%	34%